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CURATOR

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CURATOR

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A Primitive Art Exhibit by University Students

STEPHAN F. DE BORHEGYI, DIRECTOR, AND
PATRICIA HAMPTON, STAFF ARTIST, EDUCATION DIVISION
MILWAUKEE PUBLIC MUSEUM

In January, 1960, a class in Primitive Art at the University of Wisconsin-Milwaukee was given a unique final examination, and the Milwaukee Public Museum experimented with a new exhibit technique. Thirty-six students were assigned the task of installing an exhibit of primitive art in the temporary display area of the Museum.

The evening class attracted a great variety of university students. Some were drawn by the exotic image conjured up by the name, Primitive Art; others, to fulfill requirements for degrees in anthropology, psychology, or art. The students' major areas included such diverse subjects as elementary education, economics, and biology. Their educational level ranged from sophomore to professional chemist.

Drawing on the lecture material presented, each student submitted a prospectus of a primitive art exhibit organized on the basis of the five large display cases available to the class. They were encouraged to emphasize the universals of primitive art, rather than to use the simpler, but less thought-provoking, geographical area approach. It was also suggested that specific examples for illustrating their ideas be indicated in the outlines.

As would be expected, there was a wide range of quality in the outlines submitted. One, or two, could have been used without revision, and about sixty per cent (including duplication of ideas) presented some usable material. Usability was based on freshness of approach, rather than on accuracy of information. Accuracy stood at a healthy ninety to ninety-five per cent. These outlines were discussed by the senior author, who led the class, and a special committee of three Museum employees, including the junior author, who were enrolled in the class. The final organization of ideas and arrangement in the hall was determined and a chairman, and a

"team" were appointed for each of the five display cases. The remaining students were divided into "teams" for a television program, for a supplementary brochure, for an automatic sound-slide machine, for the social opening of the show, for a mobile suggested by one of the students, and for the production of labels and lettering.

THE EXHIBITS

The long and rectangular exhibit hall is approximately seventy-five by thirty feet (Fig. 1). The temporary exhibit cases ranged around this area are interspersed with four permanent miniature dioramas and two alcove exhibit rooms on historical subjects. The hall occupies a central location on the first floor in the building, with four possible entrances for the public. Although each case in the final outline was planned to be independent of the other four, we hoped that most visitors to the Museum would travel the hall by following the north to south route, from Case A to Case E.

Case A (ten and a half by three feet) had three floor-to-ceiling glass sides. Because of its location near the entrance, it served as an excellent attention-getting device, a sort of three-dimensional sign composed of striking art objects. Case B (seven by two and a half feet; Fig. 2) was strong, both visually and verbally. Under the heading "Primitive Art, a Definitive Approach" were simple sentences stating what primitive art is and what primitive art is not, with illustrative artifacts. The statements were phrased conservatively, and what was sacrificed in scientific caution was gained in impact. Case C (twenty by two and a half feet; Fig. 3) attempted, by means of the eternal triangle of artist-object-audience, to convey the most complex of the ideas presented—the artist as a non-verbal communicator. The artist in a primitive society was contrasted with his contemporary counterpart. Case D (ten and a half by eight feet; Fig. 4) was situated adjacent to Case C and contained an extension of the same idea illustrating the changing concept of beauty from culture to culture and from time to time. It exploited the all-around view provided by a case with three glass walls. Case E (twenty-three by three feet; Fig. 5) illustrated the influences of geography on primitive art. Objects from similar climatic regions were grouped together, such as art produced in frozen wastelands; art of hot, arid regions; and art from temperate and tropical zones. The limitation and exploitation of available materials, in a particular environment, and the influence of environmental and geographical location, or design, were illustrated by different colors (white for arctic wastelands, yellow for the arid zones, and dark green for the tropical areas).

Fig. 1. Floor plan of the Primitive Art Exhibit in the Milwaukee Public Museum.

The ideas presented in the exhibit were enriched in several ways. An attractive brochure elaborated on the exhibit material and listed publications, films, and recordings available for further study from the public library, or from the Museum's Audio-visual Center. These brochures were printed by our Museum press and were distributed to all visitors to the exhibit hall. A different approach to primitive art was explored by student performers on local educational television, with the guidance of the Museum's Television Section. They prepared a survey of the art of a few representative cultures and its function within those cultures which they presented with the aid of slides, actual art objects, readings, and appropriate music. Primitive music and literature were further explained, by means of a synchronized, sound-slide machine stationed in the exhibit hall. Color slides of musical instruments, dancers, and related activities of primitive peoples were accompanied by tape-recorded music, readings, and verbal explanation of the importance of music, dancing, and literature to the religious and social life of the society.

PRODUCTION

The time alloted for installation of this exhibit was a period of nine days, from the evening of the first group meeting until the informal, social evening of the opening. At the first meeting (which included the entire class), the students were given an over-all concept of the exhibit, and the previously appointed committee chairmen reported on their ideas for

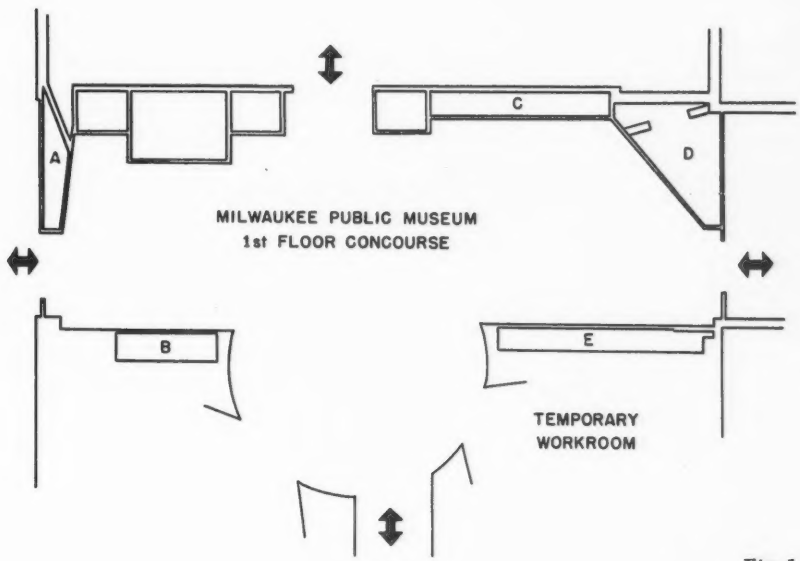

Fig. 1

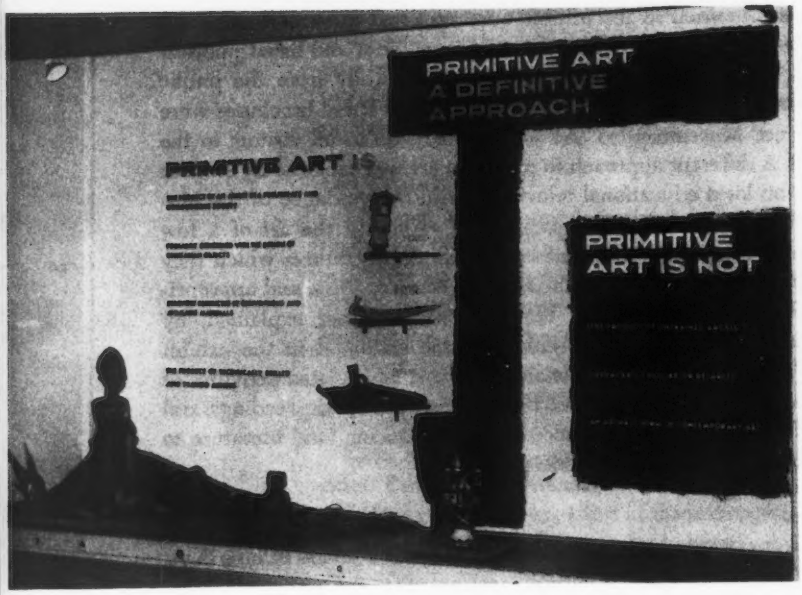

Fig. 2

Fig. 3

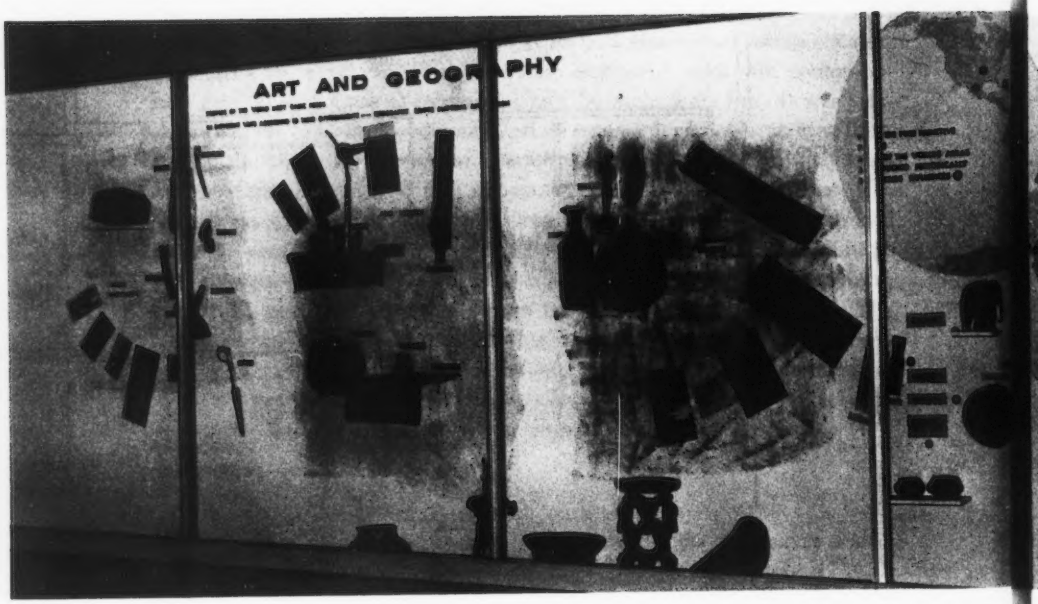

Fig. 5

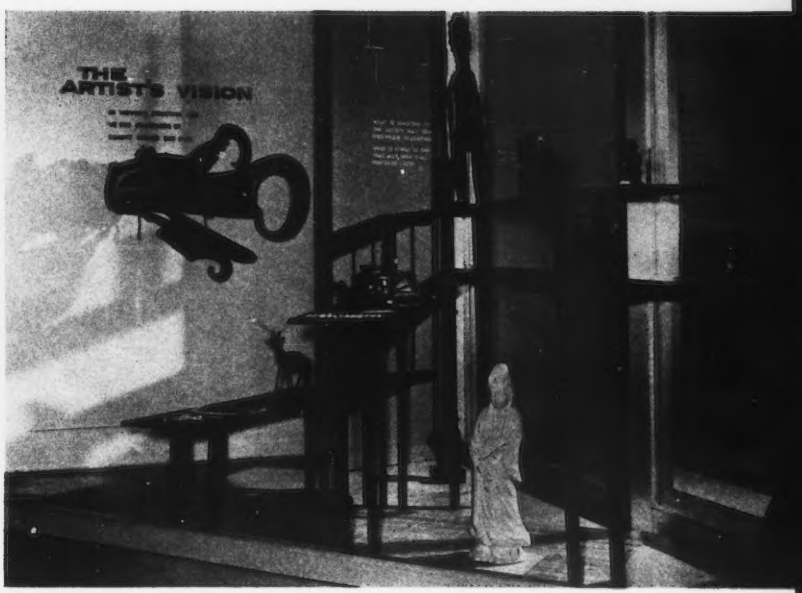

Fig. 4

developing cases. The students were informed of the facilities available to them and the limitations imposed on them.

With inexperienced workers and only twenty working hours for final designing; label writing; selection of art for display; building and painting accessories; cutting, typing, or manufacturing letters; and for installation, certain "mass production" methods were necessary.

Since opening the museum shops and studios in the evening would have necessitated costly overtime, a workroom for the students was made by closing off one of the adjacent exhibit alcoves (Fig. 6). Specific sections of this room were posted for lumber, lettering, paint, and artifacts, and

Fig. 2. What is and what is not considered to be primitive art (Case B).

Fig. 3. The artist communicates his ideas in two- or three-dimensional forms (Case C).

Fig. 4. Standards of beauty are relative and vary from group to group (Case D).

Fig. 5. Art forms are influenced by geography. Art of the frozen Arctic wastelands differs from that produced in hot or temperate regions (Case E).

Fig. 6

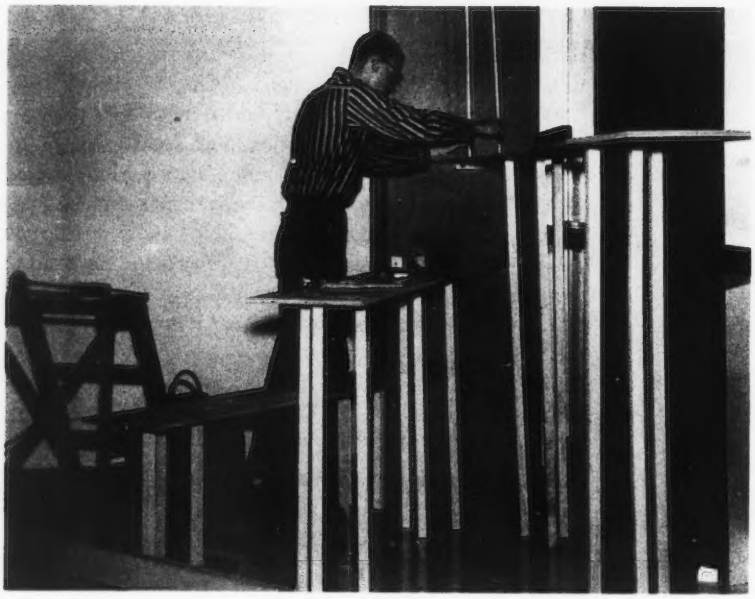

Fig. 7

materials were returned to these spots at the end of the night's work. Prior to the installation of the exhibit, the five cases had been cleaned and painted white by Museum painters. A selection of paint in black, white, and a narrow range of earth colors of different values was supplied, eliminating the time-consuming process of having colors mixed to order for the individual cases. Brushes and rollers were kept moist in buckets and cleaned by the regular Museum personnel during the day, as no water supply was available during the evening hours. Museum carpenters cut a supply of shelving in two sizes and legs of three different heights, so that the students could adapt these props to their designs. A few students, with some wood-working experience, preferred constructing case accessories for specific purposes (Fig. 7). These attempts were not always successful, and, in retrospect, it seems wiser to use professional construction entirely. A mobile sign was constructed by a student team and was hung from the high ceiling by regular Museum workers. Existing fluorescent lighting and spotlighting was used, except for two spotlights mounted by Museum electricians, to highlight this mobile sign.

Special attention was given to the labeling problem. Lettering was of three types. Two-inch paper cutouts were made for main headings, and three-fourths-inch plaster letters were cast for statements of importance. Because the Museum print shop was occupied with supplementary brochures and invitations for this exhibit, less important statements and identification labels were prepared on a typewriter with oversized type. A special committee of three students was appointed, and approved labels were channeled through these three people. By far the larger proportion of lettering was of the three-dimensional plaster type, which added to the professional look of the exhibit. These were cast by the students, with the aid of a Museum staff member. The student designers tended to rely more on visual impact than on the written word to convey their ideas.

It had been our initial plan to have each design approved by a member of our three-man Museum committee; scientific accuracy approved by another; and educational impact approved by the third. The three committee members were not constantly available, however, and close communication allowed relaxation of this procedure in favor of speed of installation.

Despite the large and somewhat unwieldy number of students involved in the project, the exhibit had an appearance of unity, achieved mainly by white backgrounds with limitation of additional colors, and by a uniform

Fig. 6. Students enrolled in the class use an adjacent museum exhibit area as their workshop.

Fig. 7. Students tried their skill in woodworking, prop-making, and lettering.

style of labels and accessories. The opening night was a great success and, owing to continued public request, the show was kept on exhibit for four months rather than for the two originally planned.

EVALUATION

Because of the success of this experiment, the Milwaukee Public Museum highly recommends the use of university students to develop temporary exhibits. Their enthusiasm enables them to make up in energy what they lack in experience. Even during the stress of the week before final examinations, ninety-five per cent of these students worked reliably and with unflagging interest. As it was a break in the regular academic routine, the spirit of the project was akin to that of a theatrical production and stimulated interest among the regular Museum staff members. As a learning experience for the students, the experiment was equally successful because limitation of the boundless, but confusing, variety of exhibit paraphernalia was combined with as much freedom as possible in the actual installation. The result of their labors was a professional-looking and highly informative exhibit on primitive art, which received favorable comment from Milwaukee citizens and visitors from other museums.

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Museums and International Cooperation

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HISTORIC BACKGROUND

A striking phenomenon of the post-war period has been the increase in international work, and the activities of many museums throughout the world have been affected. It is interesting to review some of the positive contributions that have followed.

International cooperation in the period between the two world wars was not absent among museums, although formal organizations to promote this were primarily restricted to Europe. Of these, the International Institute for Intellectual Cooperation (I.I.I.C.) of the League of Nations (established in Paris in 1924) was the most important, as one of its sections was the International Office of Museums (I.O.M).[1] This was best known to members of the American museum profession through its publication of the bulletin *Mouseion*, which treated many aspects of museum problems, and of the two-volume work "Museographie" concerned with the architecture and programs of art museums. In addition, it also published a number of technical manuals such as the "Manuel de la Conservation des Peintures," to which Dr. George Stout had contributed. Many of the projects it initiated (such as the recommendations and proposals made by the International Conference on Excavations in Cairo, Egypt, 1937) were subsequently carried out by UNESCO or concern projects which are still under way in the program of its successor.

UNESCO, an agency of the United Nations, is based on very idealistic principles which are embodied in its constitution. Its intended role was much more important than that of the I.I.I.C., as, unlike that body which

[1] That the United States was not a member of the League did not prevent its participation in many of the activities sponsored by the I.O.M. For example, it was represented at the 1937 Cairo Conference, and in addition many individuals also contributed to the activities of the organization, particularly through publications.

was administered directly by the League, UNESCO was to be administered independently of the U.N., having it own member states (which generally coincide with the membership of the U.N.) to govern it through biennial general conferences. The Museums Division, within the Department of Cultural Activities of UNESCO, is an obvious continuation of the International Museums Office. When it was established, it was to serve two fundamental purposes[2]: (1) to provide a center through which the services of the organized museum profession could be utilized in furthering the aims of UNESCO; and (2) to supply advice on the use of museum techniques to further various parts of UNESCO's program. Shortly after its establishment, in order to carry out these goals, it began the publication of an illustrated quarterly, *Museum*, and the establishment of a museographical documentation center to serve the needs of the Secretariat and of the whole museum profession.

Since then its activities have widened, and it was renamed the Museums and Historic Monuments Division in recognition of the work it is undertaking in the preservation of cultural property. As a matter of fact, in spite of the separation of functions implied in the new title, several projects now subsumed under the "monuments" program, such as the "Recommendation to Member States on International Principles Applicable to Archaeological Excavations"[3] and the "Convention and Protocol for the Protection of Cultural Property in the Event of Armed Conflict,"[4] were also on the program of the I.I.I.C. and I.O.M.

Of considerable importance to UNESCO's program since its inception was the establishment of the non-governmental organization, the International Council of Museums (I.C.O.M.).[5] It was organized at a meeting held at the Musée du Louvre in Paris during November, 1946, of members of various "National Committees on International Cooperation Among Museums," under the initiative of Mr. Chauncey J. Hamlin.[6] One of the earliest examples of close cooperation between UNESCO and I.C.O.M. was the establishment of the UNESCO/I.C.O.M Museographical Documentation Center, located in the headquarters building of UNESCO in Paris, which is operated by I.C.O.M. under contract to UNESCO.

[2] "Report of the Director General on the Activities of the Organisation in 1948," Paris, 1948.
[3] This was an outgrowth of the 1937 Cairo Conference (C.P.G. 57. VI, UNESCO, 1957).
[4] "Final Act of the Intergovernmental Conference on the Protection of Cultural Property in the Event of Armed Conflict," The Hague, UNESCO, 1954.
[5] In order to reach the wide mass of professionals of different disciplines, UNESCO has affiliated with it a large number of international professional organizations. In some instances, such as the Pacific Science Association, they existed before the establishment of UNESCO; in others, such as I.C.O.M., they were organized with the aid of UNESCO and receive a substantial part of their income in the form of a subvention from UNESCO.
[6] *ICOM News*, vol. I, no. 1, Paris, October, 1948.

THE CURRENT PROGRAM

Of the manifold activities carried on by museums, including collecting, research, publications, preparation of exhibitions, and so on, it has been necessary for UNESCO to concentrate on certain aspects owing to the limitations of its budget and the size of its staff.[7] To a considerable degree the concentration reflects the general interests of the member states who contribute to UNESCO and, in the final analysis, determine its program. Thus, while not ignoring the traditional responsibilities of museums, such as the accumulation of collections and research in the fields of their special interests, UNESCO has given particular encouragement to those aspects of the programs of museums which are of interest and of value to the general public. In a series of special numbers of *Museum*, attention has been given to traveling exhibitions, mobile museums, educational programs of museums, and exhibition techniques. This has also included the publication of the "Manual of Traveling Exhibitions" by Mrs. E. C. Osborn.[8] Perhaps it is worth quoting the need expressed which resulted in this publication (pp. 11–12):

> It is somewhat ironic that the war years produced the most vigorous exchange of cultural materials between countries. Surely a deeper understanding between peoples should assist in lessening tensions which ultimately flare into international conflicts. Presentation of the visual arts, the handicrafts, architecture, civic planning, scientific discoveries and achievements, the history of different countries offers a means of better understanding the aspirations, customs and character of different peoples. Moreover, the diffusion of knowledge for education in all fields —natural science, history, health, science, art, etc.—can be accomplished effectively through exhibitions. Visual presentation offers an international means of communication in which language barriers begin to disappear. Information can be exchanged, problems and subjects common to several nations can be studied and through such exhibitions gain wide public attention. It is hoped that a greatly expanded programme of exchange of exhibitions may be fostered through the offices of the United Nations Educational, Scientific and Cultural Organization (UNESCO). In each of its programmes since its inception, resolutions have been adopted designed to encourage exchange of exhibitions between Member States. While UNESCO is unable to undertake financial or other responsibilities of selection, securing, preparing and circulating exhibitions, it is allowed full scope in promoting exhibition exchange by lending whatever aid and facilities its international connections in the museum world may provide. Assisted by the International Council of Museums (I.C.O.M.), UNESCO is also able to furnish considerable technical information.

[7] The Museums and Historic Monuments Division has a staff of four professionals, of whom two are specialists in the museum program.
[8] *Museums and Monuments Series*, vol. V, 1953.

The last sentence from the quotation given above underlines both the potential value of UNESCO's contribution towards the development of many activities of museums, and of its limitations.

UNESCO SEMINARS

Another area in which UNESCO has aided the development of museums is the encouragement of educational programs, not necessarily school programs, but education in its wider sense. The first major project of this nature was the seminar on "The Role of Museums in Education" which was organized and held in the United States in cooperation with the American Association of Museums (September 14 to October 12, 1952).[9] A second was held in Athens, Greece, during 1954,[10] and a third in Rio de Janeiro, Brazil, in 1958.[11]

The number of individuals directly involved in a given seminar is not large. Many of the problems discussed have already been written about and appeared in various publications. Nevertheless the seminar has proved to be one of the most useful means for the diffusion of museum techniques in UNESCO's program. Rainey, for example, a few years following the Brooklyn seminar stated:

> Following up these discussions with this cursory examination of museums of Europe and America, I have the strong impression that one of the major results of that conference will be the establishment of specific educational departments in many more European museums, similar to those already widely developed in America.[12]

Undoubtedly, besides the intellectual content of the seminar, one of the most important results is the effect of the seminar on the participant, and the contributions made by the participant towards the development of his museum following the seminar. This is perhaps best summarized in a report written by Mrs. Harrison of the United Kingdom after the Athens seminar of 1954:

> I went to Athens as a sceptic; I returned fully convinced. My scepticism was on grounds of economics—what of the taxpayers' money? Would it be worthwhile? Why hash over yet again the old theme of "museums and education"? . . . My conviction is the fruit of heart-warming experience of working and living closely, for four weeks, with a varied group of men and women from 27 different countries, discussing

[9] Allen, Douglas A., "International Seminar on the Role of Museums in Education," UNESCO/CUA/54, April 5, 1954, and *Museum*, vol. VI, no. 4, 1953.
[10] Morley, Grace M., "International Seminar on the Role of Museums in Education," UNESCO/CUA/64, November 21, 1955, and *Museum*, vol. VIII, no. 4, 1955.
[11] Rivière, Georges-Henri, "Regional Seminar on the Educational Role of Museums," *Educational Studies and Documents*, no. 38, UNESCO, 1960.
[12] Rainey, Froelich, "The New Museum," *University Museum Bulletin*, Philadelphia, vol. 19, no. 3, p. 41, 1955.

> common problems, sharing prejudices and overcoming them, laughing at and with one another. One senses just a little what it would feel like to achieve citizenship of one world.[13]

Meanwhile, a second regional seminar for the Asiatic and Pacific regions is being planned as the present article goes to press, to be held in Tokyo between September 4 and October 1, 1960. The theme of this seminar, "The Museum as a Cultural Center in the Development of the Community," will be a shift in emphasis from seminars held previously. Educational programs will still play an important part in discussions, but the great need of the countries in Asia to utilize all potential services of museums for the general public (as well as to continue maintaining their traditional responsibilities) during a period of rapid economic, social, political, and cultural change is obvious. For this reason also, Mr. Robert P. Griffing, Jr., Director of the Honolulu Academy of Arts, was appointed the director of the seminar, as his museum has such a program in a community which is characterized by a blend of Eastern and Western cultural traditions.

Preparations are now under way for the organization of a third regional seminar to be held in Latin America in 1962 and a fourth in Africa south of the Sahara during 1964. The latter will probably emphasize the needs of peoples most of whom are not only illiterate but whose level of industrial development is generally lower than that found elsewhere. Hence, the requirements of educational programs for largely illiterate populations will very probably be emphasized, as well as the urgent need (which is sometimes not appreciated by the people concerned) to use museums as a means to preserve elements of their traditional cultures in order to maintain continuity between the recent past, the present, and the future.

PUBLICATION

This perhaps most obviously demonstrates some continuity with the program of the I.O.M. Nevertheless *Museum*, for example, is obviously very different from *Mouseion*, and there are other striking differences in the content of UNESCO's publications which reflect the different emphases in the programs of the institution founded by the League and of the agency of the U.N. *Mouseion* tended to concentrate upon museums in the field of the arts and history, while *Museum* has made a conscious effort to cover the activities of all types of museums. The latter publication has also laid less emphasis on scholarly problems than on museography in general.

Hence, there is an obvious difference in the make-up of *Museum*, with its large format and abundant illustrations. It has had an important effect on the diffusion of museographic techniques, so that Rainey remarked:

[13] Harrison, Molly, "Athens 1954," *Museums Journal*, vol. 54, no. 9, p. 242, 1954.

"Ideas about museum exhibitions spread very rapidly throughout the western world. An innovation in Mexico City will quickly be repeated in Chicago, New York or Paris. Effective communication among museum people throughout the west has existed for a long time, but since the establishment of the United Nations and the publication by UNESCO of the journal called *Museum*, ideas have found a new and still more effective medium for distribution."[14] The costly format and use of lavish illustrations thus find their justification in helping to raise museographic standards throughout the world. Technical problems have been treated from time to time, such as the special numbers on "The Care of Paintings" (vol. II, nos. 2 and 3, 1949), and a number of highly specialized articles have also appeared, such as "The Protection of Works of Art in Carved Wood from the Attacks of Wood-eating Insects" (vol. X, no. 1, pp. 55–67, 1957).

In addition to *Museum*, and in cooperation with the Department of Education, during the course of the "Campaign for Museums" in 1958, a number of special publications having to do with educational problems were published.[15] These monographs reached a wide audience, as they were also distributed to the extensive mailing list of the Department of Education. Thus many educators in countries where the resources of museums have not been adequately exploited became aware of their potential contribution to general education.

Finally, two manuals have been published. The first was the "Manual of Travelling Exhibitions" (*Museums and Monuments Series*, vol. V, 1953), cited above, and the second was "The Organization of Museums: Practical Advice" (*Museums and Monuments Series*, vol. IX, 1960). The latter publication was planned to meet the need for a basic text book on museography which would be particularly useful in countries where such fundamental publications are lacking.

INTERNATIONAL CENTRE FOR THE STUDY OF THE PRESERVATION AND RESTORATION OF CULTURAL PROPERTY, ROME, ITALY

The project to establish an International Centre is properly under the program for the preservation of cultural property instead of that of museums. However, a great deal of the work of the Centre is of direct interest to museums throughout the world, as it will be concerned with the preservation and conservation of important objects within the collections of museums, particularly works of art. The present Director, Dr. Harold J. Plenderleith, who was formerly Keeper of the Research Labora-

[14] Rainey, Froelich, *ibid.*, p. 37.

[15] Daifuku, Hiroshi, and John B. Bowers, "Museum Techniques in Fundamental Education," *Educational Studies and Documents*, no. 17; "Museums in Education," *Education Abstracts*, vol. 8, no. 2; *Fundamental and Adult Education*, vol. 8, no. 2; all, UNESCO, 1956.

tory of the British Museum, is one of the outstanding experts in this field. The purpose of this Centre, plans for which were prepared by the Secretariat in collaboration with I.C.O.M. and the International Committee on Monuments, is (1) to coordinate research on the techniques of preserving and restoring monuments, works of art, and historical and scientific collections; (2) to publish information on these subjects; (3) to provide expert advice, at the request of member states or national institutions; and (4) to give its support in the training of specialized staff in this field. Nineteen countries now belong to the Rome Centre. The contributions of countries belonging to the Centre are based on a scale fixed at one per cent of the sum of the annual contribution of the member state to UNESCO during 1957. It is, of course, understood that the work of the Centre is needed most by those countries not having laboratory facilities or trained personnel, and that the support of the wealthier member states would not only represent a gain in terms of interchange of information but also help to raise the standards of scientific techniques in preservation throughout the world, particularly among the countries lacking trained personnel and equipment.

DIRECT AID

In 1954 the General Conference decided to provide services of technical aid in fields not directly concerned with economic development but which were to be extended to cover the entire sphere of UNESCO's activities. Furthermore, the program which envisioned the expedition of experts, fellowships to enable nationals of a given country to study abroad, aid for regional seminars, and some equipment, was not restricted to the so-called underdeveloped nations.[16]

Since the establishment of this program, now called "Participation in the Activities of Member States," UNESCO has sent a number of missions of experts to different countries to aid in the development of museums. The present trend, which is a reflection of the needs of many museums in the underdeveloped countries, is to send short-term (one to three months), high-level experts. It may legitimately be asked whether such short-term experts justify the costs involved in fees, travel, and so on. Actually the choice of using the type of mission grew out of experience.

It must be remembered that many of the countries concerned are faced with severe economic and political problems during a period of extremely rapid social and other change. The number of nationals in a given country possessing advanced academic backgrounds and long experience is limited, and they tend to gravitate towards positions of responsibility in government and business. The result is that the problem

[16] "Proposed Programme and Budget for 1955 and 1956," UNESCO, 8 C/5, 1954.

of staffing museums is very difficult. For the present, the need is greatest for highly qualified experts to aid the authorities concerned in working out plans for the establishment of museums, in blocking out programs for the training of staff, and in establishing some sort of realistic budget which will enable a given institution not only to meet present requirements but also to plan for future growth.

Along with the short-term expert, fellowships (usually from nine to twelve months in duration) are frequently furnished to a national to enable him to study abroad and thus gain experience. These study programs may combine courses in a university with practical training in a museum. Or, on the other hand, if the candidate has already had such basic training, he may study a wide range of museums and thus to obtain a clear idea of museum practice followed among several institutions.

Various problems are involved in all projects of this nature, regardless of the size of the budget involved or the intentions of both parties, for example, a change in government. Even in the United States, the growth of federal civil service is a fairly recent phenomenon. It was not so long ago that a cabinet post, such as that of Postmaster General, was extremely important owing to the patronage it controlled. In many governments the spoils system still prevails to the degree that a trained individual in a national museum may have his appointment terminated and he be replaced by a member of the political party which came into power.

Other factors which delay the development of museums would include economic problems of considerable severity which lead governments to use available resources to meet the requirements of expanding food production or increasing industrial demands. The present marginal economic resources which frequently prevail during this period may cause a government to decide that it cannot undertake the development of museums. That so many countries in such a situation are willing to expend sizeable budgets on the establishment or reorganization of museums is witness to the importance they attach to the museum and its functions.

Three summaries will be given to illustrate typical examples of the missions of experts[17]:

LIBERIA

Up to the present no museum existed in Liberia. Economic and political events prior to World War II had relatively little effect on the country, and such influences as there were were restricted to the coastal areas. In the interior traditional patterns of tribal organization, religion, and society were maintained. In recent years, however, external political events, as

[17] A partial summary of the aid given during 1957–1958 was contained in "Programs Through Which UNESCO has Aided the Development of Museums in Asia and Latin America," by H. Daifuku, *The Museologist*, no. 68, pp. 8–11, September, 1958.

well as marked changes in social organization, have not only affected the coastal region but also opened the interior to influences which are rapidly changing the traditional patterns and orientation of the people. The Poro cult, with its elaborate "schools" and use of masks to represent different deities, has nearly disappeared. Some of the best examples of such masks (made of impermanent material) are now to be found in museums abroad, and other examples of traditional material are rapidly disappearing.

The government is not unaware of its responsibilities to the future. Two Liberians have received fellowships from the Netherlands to study museum administration and curatorial techniques at the National Ethnographic Museum in Leiden. In this connection, when the government requested the aid of UNESCO, it was decided to send the director of the museum in Leiden, as an expert, to Liberia, as he would not only have the professional background necessary but also would be aware of the capabilities of the staff for the museum. A mission of three months was approved, divided into two stages of six weeks each. The first stage (August and September, 1959) was a survey of possible facilities which might serve for the museum, in this case an examination of the former mansion of the President of the Republic, the alterations needed, the drafting of outlines for a collection policy, a general program of the museum, estimates for a budget, and so on. Discussions were held with the minister under whom the museum would be built, and with the President, about the role of the museum. The second stage is in preparation, and plans are being made to discuss detailed plans with the architect and with the officials of the ministry, the work to be done, the commencement of accumulating collections, and the installation of an inventory system. UNESCO has furnished two cameras and an enlarger, as well as a tape recorder to be used by the museum for documentation purposes.

PERU

This country illustrates another type of situation. Several museums were to be found in Lima, but not a museum of fine arts. An interested group had been working for several years towards the establishment of such a museum, and finally obtained the cooperation of the government. One of the possible sites for the museum was an old exhibition building designed by Eiffel (of the Tower fame), which was in use by the Ministry of Agriculture. The problem was whether it would be preferable to construct a new building or to adapt the old building for this purpose. Each solution had its advocates.

The government requested that UNESCO aid it by sending experts to look over the situation and propose a solution. When the post was described, the Swedish National Commission nominated two: a museographer, Dr. A. Westholm, Director of the Fine Arts Museum in Göteborg;

and Mr. H. Asplund, an architect of Stockholm, who had previously worked with museums. The two experts, working as a team and in collaboration with Peruvian colleagues, proposed a plan to adapt the old building for its new function. The museographer helped to set up specifications for the building, the amount of exhibition space required, and the laboratory facilities that would be necessary, while the architect prepared plans. These plans, with slight modification, have been followed by the Peruvians. In addition, a member of the staff was given a fellowship by the Government of Sweden to pursue advanced studies in the museum of Dr. Westholm. A supplement was also furnished by UNESCO so that the same staff member could gain an understanding of restoration techniques at the Istituto Centrale in Rome.

AFGHANISTAN

This illustrates a third type of mission, and one which is relatively rare in terms of our program up to the present time, as it represents a transitional phase of development. A national museum has existed in the suburbs of Kabul, possessing many important items in the collections which have been enriched over a series of years from the activities of various archeological missions that have worked in the country. Owing to the lack of trained personnel and equipment, the collections were deteriorating steadily. After prolonged negotiations with the government, UNESCO sent a team of three experts composed of Dr. J. Gabus, the Director of the Ethnographic Museum in Neuchatel, Switzerland, as the chief of the team; Mr. J. C. Courtois from St. Germain-en-Laye, France, to install a modern inventory and cataloguing system; and Mr. R. Hafez, National Museum, Damascus, Syria, to begin a program for the restoration of the famous collection of ivory objects excavated at Begram.

The government, in its turn, appointed four individuals to work with Mr. Courtois in cataloguing, and two to receive training in restoration. Following the arrival of the team, Professor Gabus obtained the nomination of an Afghan, Dr. Ziai, to become the director general of antiquities and of museums. The system of staffing the museum was reorganized, and the government placed a budget for the purchase of exhibition equipment to be used at the discretion of Professor Gabus.

The experts have gone on several missions in carrying out the program of modernization. In the summer of 1960, while Messrs. Courtois and Hafez continued their tasks, Professor Gabus, in cooperation with the Afghan authorities, planned the specifications of a new museum building to be constructed in Kabul. The scope of the activities of the museum will be enlarged to include ethnography as well as archeology and history.

As part of the program to develop a trained staff, two Afghans have been given fellowships by the Asian Foundation to go to Damascus to

study the techniques of restoration with their mentor. The Swiss Government has also furnished fellowships in cooperation with the Asian Foundation, to enable Afghans to carry on studies in museography in Neuchatel. Here each Afghan works with a Swiss colleague so that the former can absorb modern techniques, while the latter widens his knowledge of Afghan culture. In addition, the director general of museums and antiquities was given a UNESCO fellowship to study the administrative problems and the techniques that are followed in France, Switzerland, Italy, and the Netherlands.

RELATIONSHIP WITH THE INTERNATIONAL COUNCIL OF MUSEUMS (I.C.O.M.)

The Secretariat of UNESCO is usually represented at various I.C.O.M. conferences and meetings of special committees. Its program is planned in consultation with UNESCO and is closely integrated with its goals. In many instances special committees or projects which originate in UNESCO are carried out through contacts with I.C.O.M. The following examples illustrate some of the projects that have resulted from such cooperation:

1. The Agreement on the Importation of Educational, Scientific, and Cultural Materials[18] is an international agreement sponsored by UNESCO the purpose of which is to make easier the importation of materials by reducing tariff and trade obstacles.

In October, 1957, UNESCO convened a meeting in Geneva to examine the application of the agreement. This meeting was attended by governmental experts from fifty-two nations, including the United States. The experts noted that, although economic in form, the Agreement was intended to promote social and cultural progress and recommended that all countries should apply it, and in the most liberal manner. The central feature of the Agreement is exemption from customs duties.

Of particular interest to the museum profession is Article III of the Agreement adopted at the 1957 meeting:

> The contracting States undertake to give every possible facility to the importation of educational, scientific or cultural materials, which are imported exclusively for showing at a public exhibition approved by the competent authorities of the importing country and for subsequent re-exportation. These facilities shall include the granting of the necessary licenses and exemption from customs duties and internal taxes and charges of all kinds payable on importation, other than fees and charges corresponding to the approximate cost of services rendered.

[18] UNESCO, 1958. The United States is not a party to the Agreement, but Afghanistan, Austria, Belgium, Cambodia, Ceylon, Cuba, Denmark, El Salvador, Finland, France, Federal Republic of Germany, Ghana, Greece, Guatemala, Haiti, Israel, Jordan, Laos, Luxembourg, Federation of Malaya, Monaco, the Netherlands, Norway, Pakistan, the Philippines, Spain, Sweden, Switzerland, Thailand, United Arab Republic (Egypt), United Kingdom, Viet Nam, and Yugoslavia are.

> Nothing in this article shall prevent the authorities of an importing country from taking such steps as may be necessary to ensure that the materials in question shall be re-exported at the close of their exhibition.

In addition, it is recommended that, both upon exportation and importation, the customs inspection should occur at the museum or place of exhibition, in the presence of a museum curator and his specialized staff.

The 1957 meeting, noting that most exhibitions entitled to these facilities have been held under the sponsorship of the International Council of Museums, recommended that exhibitions certified by that organization should be granted the privileges of Article III. The International Council of Museums, with the approval of the 1957 meeting, has established a label for that purpose which was reproduced in the pamphlet cited above in footnote 18.

The I.C.O.M. Commission for international artistic exhibitions meets annually to discuss different classes of exhibitions and to classify them. Those that have been recommended or approved are eligible to use the label prepared in accordance with the states that have signed the Agreement.[19]

2. Recommendation to Member States on the Most Effective Means of Rendering Museums Accessible to Everyone.[20] In contrast to the "Agreement" mentioned above, in which I.C.O.M. was invited to contribute its services, the studies carried out for the preliminary report were undertaken by I.C.O.M. under contract to UNESCO. Similarly, many of the technical features of the draft Recommendation were prepared by I.C.O.M. on the basis of answers received.

A great many features of the Recommendation are already found in practice among museums in the United States, but it should not be forgotten that such practices are not found universally.[21] Moreover, in terms of national legislation it should also be remembered that, in most member states, museums are governmental rather than private institutions.

While the foregoing examples illustrate the contribution of I.C.O.M. to some of UNESCO's projects, its more important functions have to do with its own program based on international cooperative work of different specialists. I.C.O.M. has established the following International Subject Committees: (1) museums of science and technology; (2) natural history museums; (3) museums of ethnography and folklore; (4) museums of

[19] See *ICOM News*, vol. 11, nos. 5–6, pp. 14–15, 37–38, October–December, 1958.

[20] Unlike an Agreement, which is an international legal document that is binding on those countries that sign it, a Recommendation is suggested as a model to be used by member states for national or local legislation.

[21] As a result of the publication of the preliminary study UNESCO/CUA/97, August 31, 1959, the Virginia Museum of Fine Arts has begun an experimental series of evening visiting hours (*Museum*, vol. XII, no. 4, p. 284, 1959).

archeology and history; (5) museums of art and applied art; (6) local museums; (7) scientific museum laboratories; (8) architecture and museum techniques; (9) documentation; (10) education; (11) administration and personnel; (12) film and television; and (13) museums and collections of glass.

A number of publications have resulted from the work of I.C.O.M.'s committees. Some of the results have been published in *ICOM News* or in special publications such as "Museums and Young People" by Germaine Cart, Molly Harrison, and Charles Russell (1952) and "Museums and Teachers" by the I.C.O.M. Committee for Education (1956). Others have been published in UNESCO's quarterly, *Museum;* for example, following the meeting of the I.C.O.M. Committee on Local Museums, two special numbers (vol. X, no. 3, 1957, and vol. XI, no. 3, 1958) were issued on the theme "Regional and Local Museums."

As with many other non-governmental organizations receiving subventions from UNESCO, the influence of I.C.O.M. is growing steadily, and accompanying this expansion is a necessity for a growth in its administrative functions. It is evident from the brief survey above that I.C.O.M. carries on many of the projects that were formerly done on a governmental level, i.e., by the I.O.M. The nature of the work reflects this difference; the work of I.C.O.M.'s subject committee, composed uniquely of specialists, differs somewhat from the *ad hoc* committees established by UNESCO which are not only composed of specialists but also include members of the Secretariat, frequently specialists from the legal branch of UNESCO, and representatives from governments. Liaison between the two organizations is very close, in part effected through the presence of a member of UNESCO's Secretariat at most of its important meetings, including the meetings of its Executive Committee, and through frequent discussions between its Director, Mr. Georges-Henri Rivière, and the Secretariat. As with other non-governmental organizations having consultative status, I.C.O.M. is kept informed of UNESCO's program and takes part in the meeting of UNESCO's general conference through observers.

I.C.O.M. also works through its different national committees, composed of active members of the museum profession (up to fifteen) and through a large number of associate members. The increased interest shown in the activities of I.C.O.M. by museographers is reflected in the high attendance at its general conferences. The last, held in Stockholm, Sweden, was attended by over 350 museographers from thirty different countries (twenty-three were from the United States).

SUMMARY AND DISCUSSION

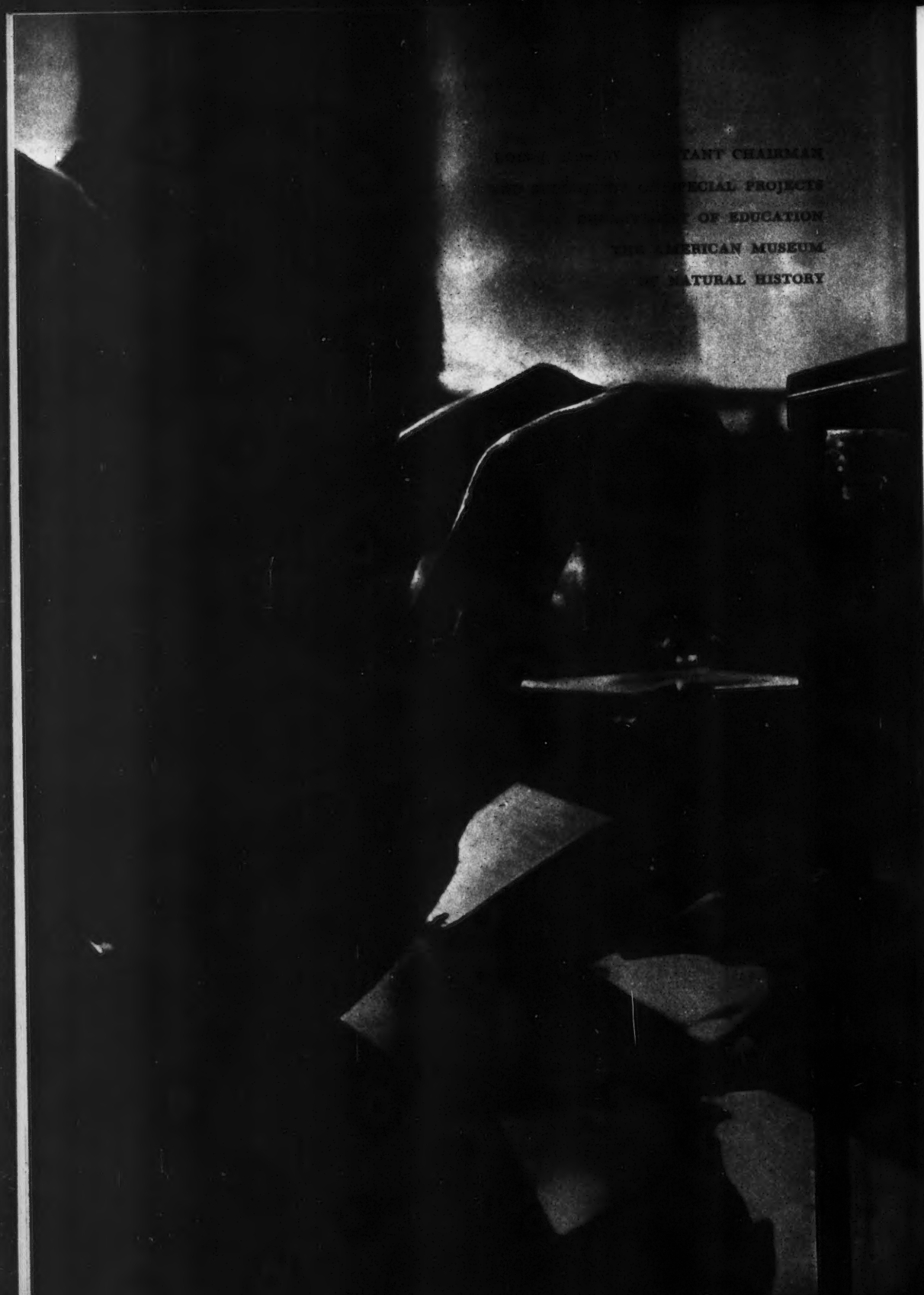
There has been an over-all increase in international cooperation and the exchange of ideas since the end of World War II. UNESCO and I.C.O.M.

are two means through which the museum profession has taken part in these exchanges. As a result of the planned programs of these organizations there is evidence, particularly in exhibition techniques, educational programs, exchanges, and research, of a growing appreciation of developments occurring elsewhere and of the lessening of needless duplication. Publications and conferences of various types have been the principal channels through which this has been taking place.

A major criticism that has been leveled against this tendency is that it results in a general "sameness" throughout the world. However, in the particular case of museums it must be pointed out that many were originally modeled after European examples of the nineteenth century, and the arrangement of exhibitions, the manner of presentation, and the programs of research were more or less similar throughout the world during that period. The similarities that one finds today among modern museums located in Europe, Africa, or Asia reflect contemporary interests and standards of taste just as much as the museums of the nineteenth and early twentieth centuries also held common standards. A major difference between the two periods is the acceleration of the diffusion of ideas today.

Moreover, there is much keener appreciation of the unique aspects of a given cultural tradition today than there was in the past. It is this factor which, in spite of generally similar standards, should give an institution its own character. An appreciation of one's own as well as other cultures demands a certain degree of sophistication, and this is a particularly acute problem for many peoples in the underdeveloped areas. Undoubtedly advice and aid, in order that needless repetition of errors be avoided, will be needed for some time to come. For the present much of this advice will be along the lines of teaching an understanding of basic principles and developing techniques to suit local conditions. In the near future the need may be for long-term (one to two years) missions of experts rather than short-term missions concerned with advice, in which an expert will be engaged to run the museum for the local people until they have a nucleus of individuals who have gained not only academic but administrative experience. In many instances, owing to financial as well as other reasons, this period of tutelage will not be long. In due time the local people should have acceptable standards and begin to develop techniques of their own.

The
Peter Boone VanGerbig
NATURAL SCIENCE
CENTER
FOR
YOUNG PEOPLE


TANT CHAIRMAN
PECIAL PROJECTS
OF EDUCATION
ERICAN MUSEUM
NATURAL HISTORY

The Peter Van Gerbig Natural Science Center for Young People celebrated its sixth birthday in November, 1960. It is run by the Department of Education of the American Museum as an exhibit and information center for boys and girls of all ages, and for parents and other adults interested in working with children in the field of natural history.

The Center, which is operated autonomously within the Museum, consists of an exhibit hall, twenty by forty feet, and an adjacent room that serves as an office for the Center instructors and as a work area, and contains a reference library for staff and visitors. There are also storage facilities and an area for looking after the live animals that are on exhibit.

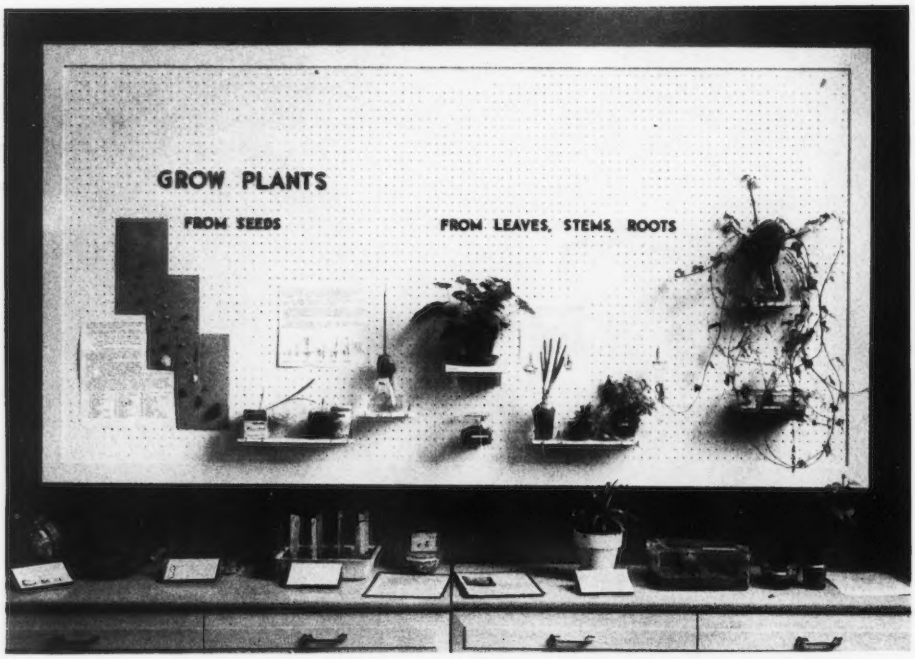
School classes and other groups visit the Center for a period of instruction by a member of the Center's staff, and the room is open to the public as well. During July and August the Center is open to the public both mornings and afternoons to accommodate vacationing boys and girls. Over 200,000 people have already visited the Center and participated in its activities.

Visitors may learn about some of the wild animals to be found in New York, listen to recordings that supplement the exhibits, play games, and take quizzes which help them learn about the natural history of the city. Youngsters help to make the exhibits (sometimes of their own collections), and assist the staff in looking after the animals.

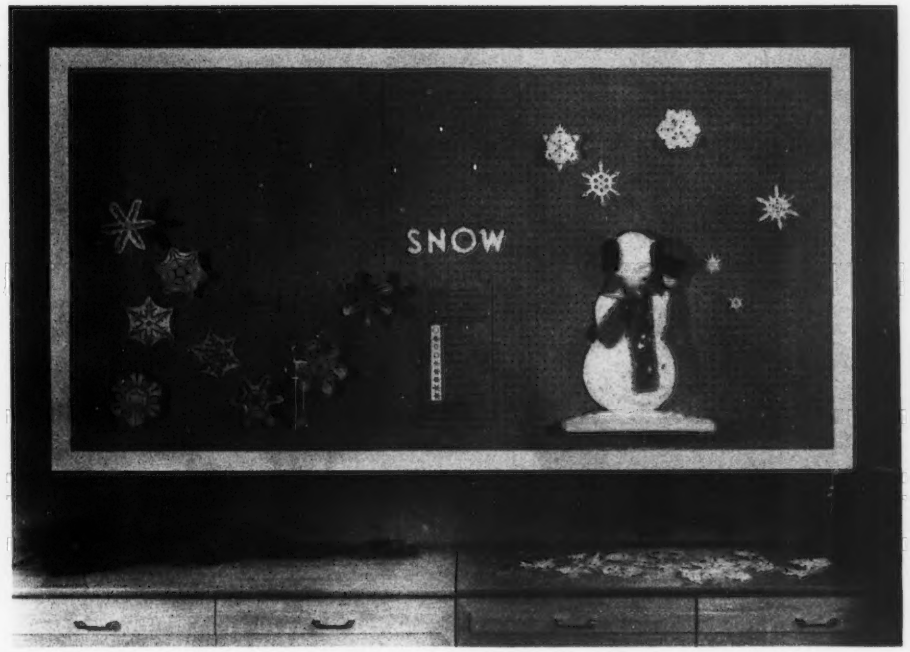
Originally the two large exhibit panels were changed each season, but later it was decided to change them once a year only, in September, when the rooms are closed for renovation. Small exhibits, placed in various spots around the room, are of a seasonal nature and change accordingly. Exhibits are the work of the Center staff and of others on the Department's teaching staff.

The Center is financed by investment income from a special fund, by contributions, and by the Department of Education. It is staffed by two full-time instructors, by part-time instructors weekends and summers, and by varying numbers of part-time assistants and volunteers.

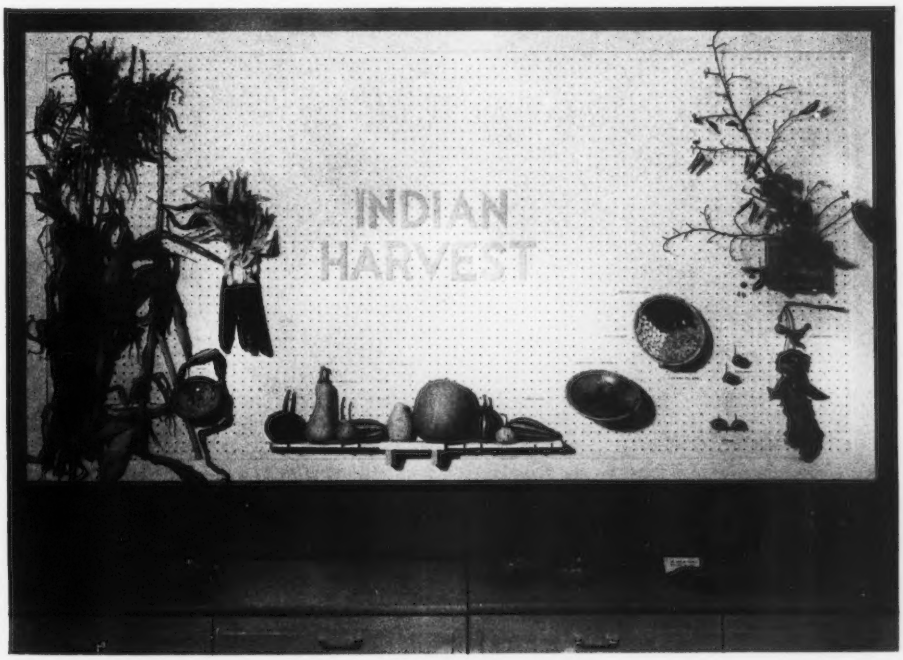
Standard four-by-eight-foot Perforall panel lifts on and off two supports fastened to the wall.



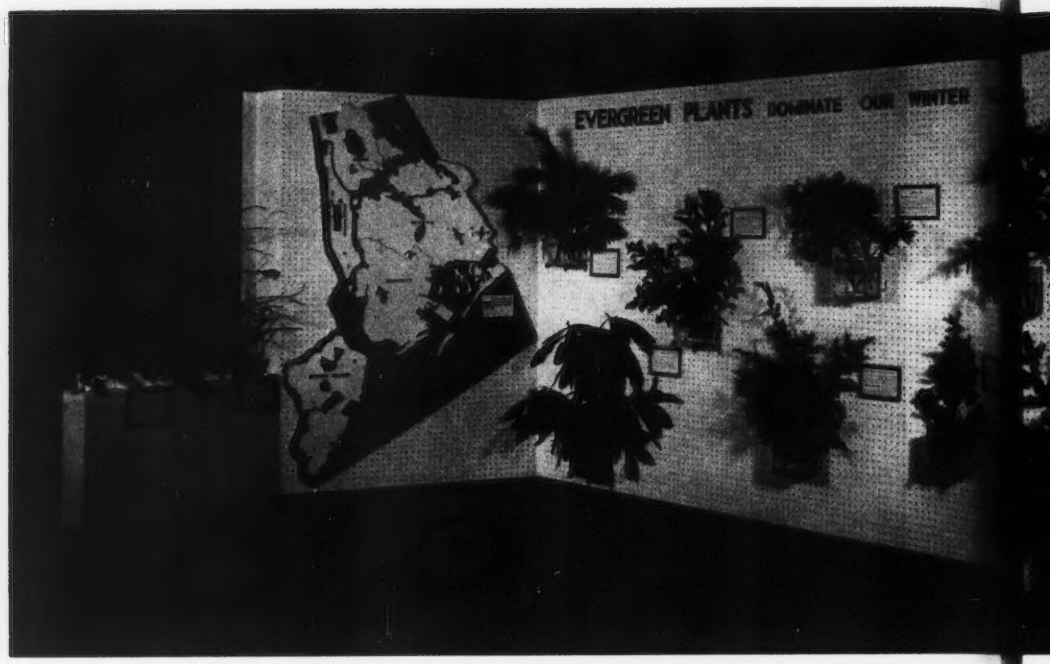
Mimeographed Bulletins, *a penny a sheet, are available on the exhibits and on other topics.*



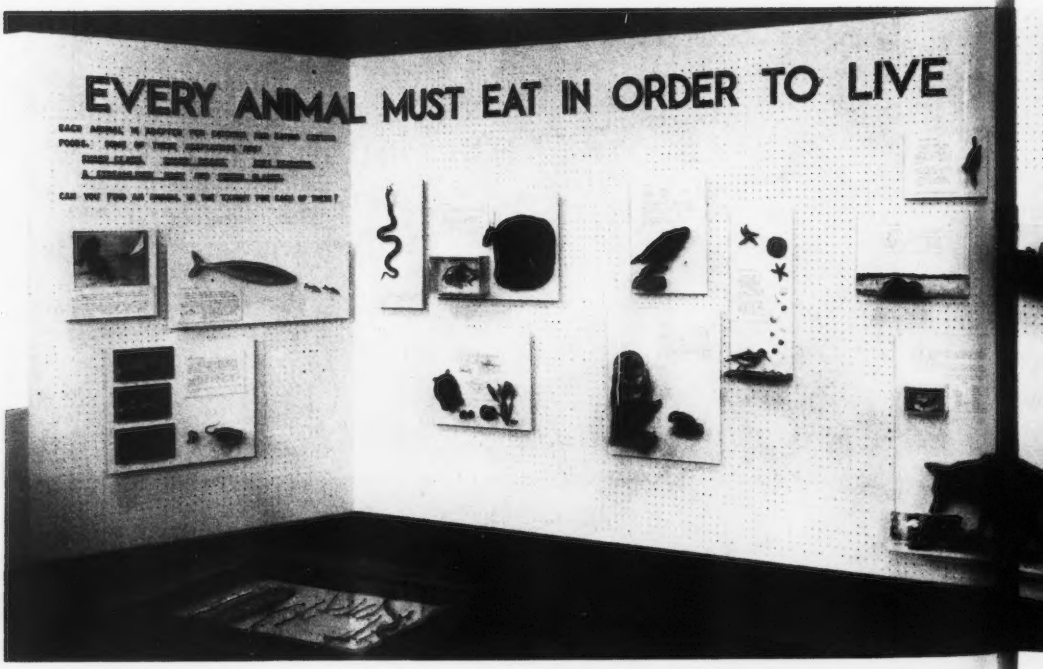
Children cut paper snowflakes; others are photographs. Plastic-sprayed bowls form snowman.



Warm yellows and browns symbolize autumn; green on white, spring; white on blue, winter.

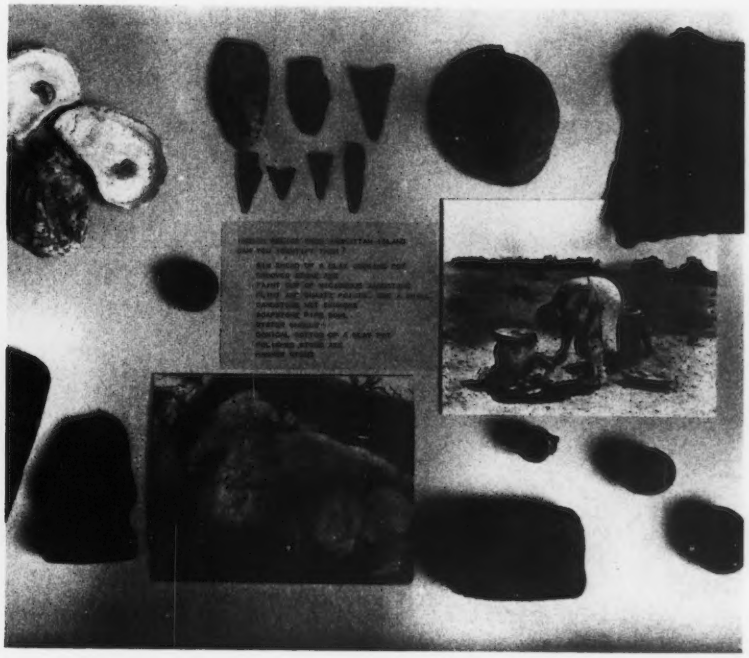


Containers of water held evergreens sprayed with water glass to fireproof and preserve them for the ten



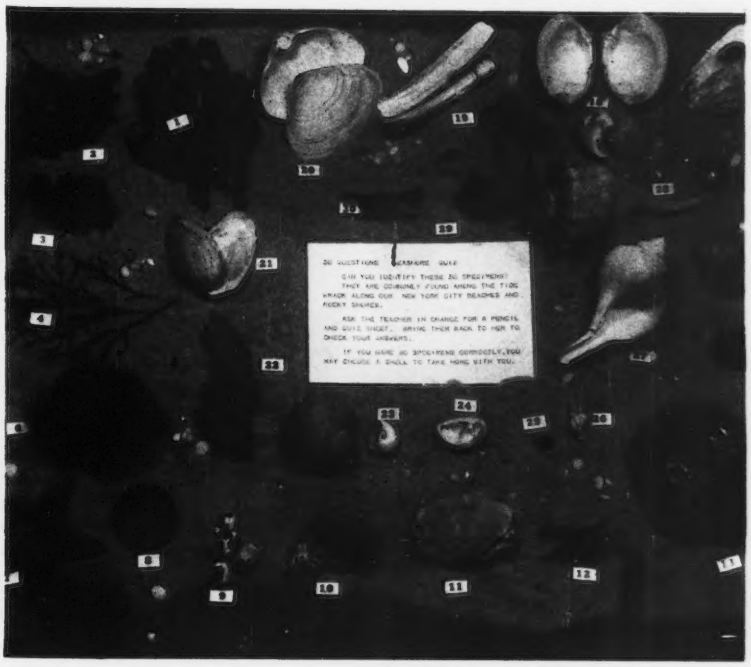
Homosote units are hung on a fourteen-foot panel. The movable glass-topped table is for small exhibits

weeks they were shown.



Homosote insert for the glass-topped table or for drawers (see previous pages).

which also fit in drawers.



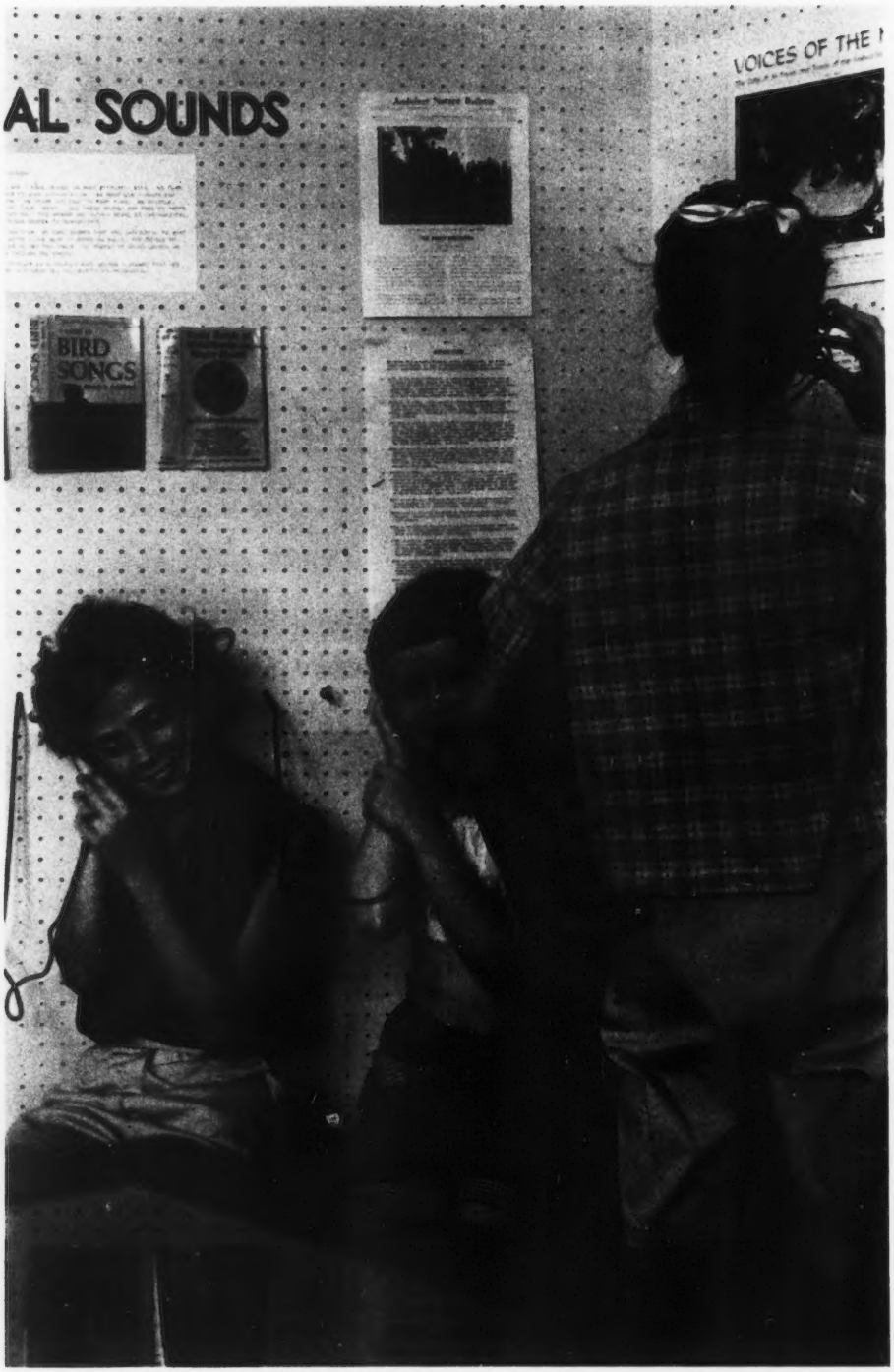
Quiz for table or drawer, with answer sheet available. The reward is a shell.

A high school student volunteer assists by demonstrating a live turtle to a younger visitor.

All eyes watch for light denoting correct answer. A switch activates buzzer for blind visitors.

A sixteen-year-old volunteer arranges his own collection as part of a summer activities exhibit.

Visitors may handle the live animals under the supervision of a member of the Center's staff.



Phonograph records may be heard through earphones or over a loudspeaker (for group use).

IV/1 1961

Mass Medium of Individualism

A. E. PARR, SENIOR SCIENTIST
THE AMERICAN MUSEUM OF NATURAL HISTORY

It is the lot of educators and parents to be torn between a desire to bask in the immediate gratitude bought with easy knowledge and tiny pleasures, and a deeper hope of future vindication and more durable happiness flowing from a sterner course. In our concern with physical welfare the obviousness of the conflict makes the choice of action relatively simple. The connection between bellyache and overindulgence is so painfully plain that wisdom is easily gained.

In the training of the mind the results of our mistakes are more subtle and long delayed. Perhaps they appear only as slight weaknesses in character or judgment, which do not find expression until much later in life, when the victims of our shortsightedness have left our ken, and a sense of responsibility for their thoughts and deeds can no longer impress itself upon our consciousness against our own inclination towards self-approval. The temptation to strive for immediate popularity in educational efforts is therefore overwhelming, and the price of evil the public may later have to pay is so remote from its true cause that it can easily be disowned by those directly, though not intentionally, responsible for it.

Modern psychology and modern inventions have placed in the hands of education innumerable methods by which it may make the absorption of knowledge an easy, entertaining, and almost effortless experience. Television, motion pictures, radio, public address systems, recorded speech, and mechanized demonstrations offer their messages of entertainment, propaganda, information, and advertising in endless profusion in homes, theaters, and public places. The same methods and media are available to the educator in his school or his museum.

To take objective measure of the educational merits of different modes of presentation is extremely difficult, and the results would be very controversial if, in fact, one did succeed. Still, we recognize some basis for judging a school by its product, and express our conclusions in the good,

bad, or indifferent reputation we bestow upon each. But the public museums do not even have to stand the test of having their audience subjected to occasional examinations to measure the gains made in knowledge or understanding. Among all educational institutions the museums therefore offer the most fertile field for opportunistic catering to immediate popularity. A count of noses, not a measure of knowledge, is all that is asked of us. But before we yield to a temptation to convert to the methods that have brought others success in popularity contests or market place, let us first examine what these methods would do to the particular purposes and ideals we do, or ought to, serve in our society. Let us also, before we imitate others, try to discover if we do not have special functions of our own in which we ourselves could not be imitated by anybody else. And, if we do, let us rest our case on the value of these functions, performed to the best of our ability.

First among the friendly or indifferent, cognizant or unaware competitors who have, at various times, helped to confuse the natural history museums about their place and purpose in the scheme of things, were the zoological gardens. When Hagenbeck as early as May, 1907, began to show his living animals outdoors in simulated natural landscapes, he was not far behind the first habitat groups in the natural history museums. The tremendous strides made since that time by the zoological gardens, and their siblings, the public aquariums, have only increased the seeming duplication and superficial resemblance between these institutions and the museums, until it has become possible for confused thinking applied to confusing circumstances to bring forth such suggestions as, for instance, that a museum does not need a department of fishes if the city in which it is located already has an aquarium.

It is not my task to argue the case for the zoos and aquariums. Their advocates are numerous and highly competent, and, as a devotee of both kinds of establishments, I should undoubtedly find myself subscribing to most of their arguments in advance. Our task here is simply to find the special functions and advantages of museums that cannot be duplicated by zoos and aquariums, however great their outward resemblance. That zoos and aquariums, on their side, also have special functions and advantages goes without saying.

Although there are exhibits in many zoological gardens and, particularly, in aquariums that seem hard to tell from museum habitat groups, until the bird takes to the wing or the fish darts from its hiding place, these displays can, nevertheless, not give a true picture of the home environment of the species, except when they deal with strictly local fauna and flora. Topographic, climatic, and other limitations make it physically impossible to create a complete and realistic reconstruction of a distant landscape with the use of living materials. With their artificial plants and

still replicas of the living beasts, the museums face no such restrictions upon their creativity. They can show the zebras amid the true vegetation of the hot African plains and still have a convincing view of the snows of Kilimanjaro in the distance. It might be thought that the painted illusion of remote perspectives, at least, could be equally effectively applied to the display of living material. But this is not so. Successful illusion requires rigid control of shadows and of forced perspectives. Animals that move about will throw their shadows in "impossible" places, as on a mountain top, and will invade the converging lines of perspective to tower over trees a hundred feet tall.

In the contemplation of the habitat form of exhibition, we begin to see that the stillness of "life" in the museums, for which we sometimes tend to be slightly apologetic, is actually a great advantage, offering the museum unique opportunities to be of service to education in ways that other media cannot follow.

This advantage has application not only to the presentation of the totality of nature but also to the demonstration of individual functions. If we want to use living material to show the characteristic activities for which a particular animal would seem to have become adapted, we become dependent upon the mood of our performer, and in no circumstances will we be able to make him perform continuously. Whether or not the class or the individual will receive the lesson our exhibit is meant to give becomes a matter of sheer and unpredictable luck. The museum cannot at any time show a kangaroo jumping, but it can show a kangaroo in the act of jumping at all times. The role that dozing in the sun or in the shade plays among the "activities" of living things is sometimes discouraging to watch. Dead specimens also permit explanatory expositions of their parts in ways that life could not tolerate. The increasing use of supplementary exhibits of museum type in zoos and aquariums pays tribute to this fact and is perhaps pointing the way towards future institutions in which the functions of museums, zoos, and aquariums will be completely combined and integrated. The combination already exists in many places, but true integration has scarcely been started anywhere.

Other media, methods, and inventions with which museums must compare their performance include those of books, movies, and television—schools, theaters, and toys. The first three of these are essentially two-dimensional media. The claims they often make to having conquered the third dimension are founded upon appearances only, as lacking in reality as the *trompe-l'oeil* of other days. The illusion is based upon an immutable visual relationship between a fixed or, in the case of motion pictures and television, an unalterably changing perspective. The camera may have moved freely in three dimensions. The viewer does not. His vicarious movements are bound to the course of the camera, as the railroad train is

Fig. 1

Fig. 2

bound to its tracks. He can be offered only a series of two-dimensional images in a succession over which he has no control, and from which he cannot deviate.

The great virtue of the genuine third dimension of museum exhibits is that the observer's choice and control of perspective remain unabridged by the translation of images through mechanical devices. He can move around the object or change position before it according to his own wishes or needs, in order to trace connections and relations that are not visible from the "front and center." His own curiosity and his own ability to explore a subject have a free rein. This scope of selection applies not only to perspective, but also to the time devoted to the study of each object or subject, and to the sequence in which they are observed. Among the six other media, methods, and inventions we are now discussing, only the toys are potentially able to offer a similar freedom of choice of manner, speed, and order of learning. We shall return to the toys later.

Among the two-dimensional and pseudo-three-dimensional media the freedoms of choice decrease as mechanization increases. In motion pictures and on television both the pace and the contents to be experienced by the audience are unalterably fixed in advance. The individual may accept or reject what is offered, but cannot change it to fit his personal needs and interests. The printed word offers considerably broader opportunities to select individual paths through the fields of learning. The speed of progress is entirely determined by the capacities and inclinations of each individual reader. Even the order in which a subject is studied can be altered in its broader aspects, but not in its finer details. One may skip forward or turn back to later or earlier chapters, but the patterns and associations of thoughts and concepts in single sentences and periods are uniquely determined by the author. While films and television give no freedom of choice within an accepted presentation, it may be said of the printed medium that it offers the individual complete freedom of pace, and some freedom of sequence, but virtually no freedom of manner, and no freedom of perspective at all.

The reference to toys in connection with this discussion was not entirely facetious. For better or for worse, toys play an important part in our education. In earlier days this was largely coincidental and unrecognized. Today the relationship between toys and the process of learning is often greatly improved upon by the deliberate and commendable design of enlightened parents and manufacturers. In fact, many of the best "educa-

Fig. 1. Landscape in Hagenbeck's Stellingen Zoo in 1907.

Fig. 2. Habitat exhibit of spiral ibex and goats in Stellingen Zoo in 1907.

tional toys" now flooding the market differ from good museum models only by the very minor crudities that seem an unavoidable corollary of mass manufacture, and the only way one can always be sure to be able to tell one from the other is by simply declaring that a toy is not a toy when it is in a museum.

It is obvious that toys also offer a genuine third dimension with all the freedoms of observation found in a museum, and indeed with an additional freedom very rarely obtained in an exhibition hall, namely, the freedom of manipulation. Does this, then, mean that toys merely need some slight qualitative improvement in order to take over the educational task of the museum and to do it even better, with the added convenience of doing it at home? The answer is "yes and no." In the first place there would, of course, scarcely be any home capable of maintaining a collection of toys adequate to replace the collections of even a small museum. On the other hand, there cannot be any doubt that a personally owned toy working model of good quality will be far more effective than an impersonal museum exhibit when it comes to teaching an understanding of a particular article, such as a tool that might be seen in an ethnographic collection or a more complex invention shown in an industrial museum. But, when we move from copy to original, and from the particular to the general, the museum again comes into its own.

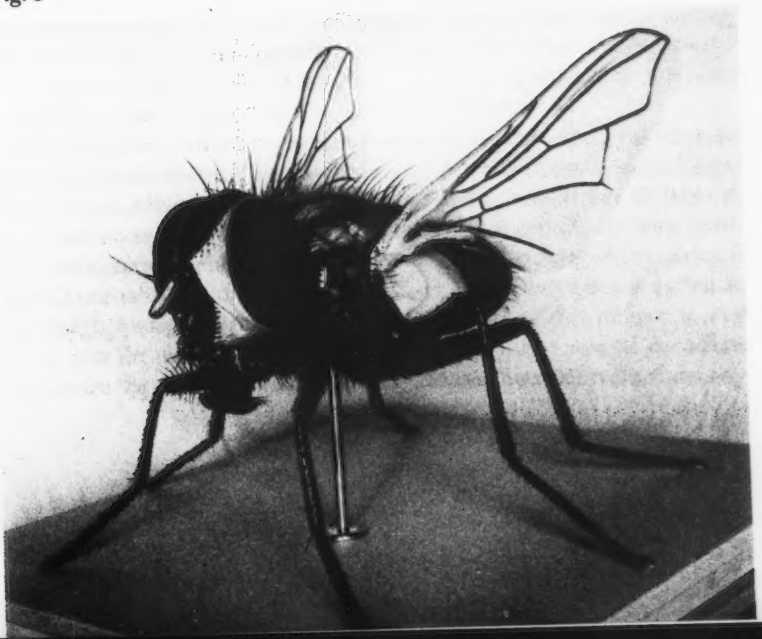
While models are an invaluable educational tool of museums, schools, and homes alike they lack the impact of "the real thing." This is why it is so important in a museum to use actual specimens as often as possible, even at some loss of the lucidity and simplicity with which a phenomenon could be illustrated by models, which gain in intelligibility by what they lose of the reality they represent. A subject treated by models only, particularly when it is done in three dimensions, tends to take on a subtle air of non-existence which gradually discourages interest, especially among the young. In teaching the subject of human biology, for example, it is unquestionably necessary to rely heavily upon models, animated diagrams, and similar methods of simplification. But it is equally essential to keep alive the sense of urgent reality by also showing actual organs from human bodies among the imitations.

Beyond giving reality to the particular, the museum also has an ability to deal with the general on a scale, and therefore in a manner, that makes it potentially unique among educational institutions and other aids to education.

The value of being able to observe things in a museum according to one's

Fig. 3. Educational toy model of a bumblebee and a museum model of a fly.

Fig. 3



own choice of the order in which to see them has already been mentioned. The value of this freedom is not reduced by the fact that there is a certain order imposed upon the exhibits of a museum, which is quite inescapable regardless of how a visitor may choose to ramble. Whatever is seen is (or should be) seen in the context of related phenomena, arrived at by a tour, however hasty, through themes developing in an orderly and logical manner.[1] A well-organized museum should offer the visitor the same kind of freedom to wander, and to learn from the innate order of his surroundings, that a walk in nature gives. With all due respect to the playroom, it partakes more of the fascinating character of the jumble shop than of the grand design of nature.

In a sense, it is therefore true to say that it is in the over-all design of its presentations, rather than in the details of its particular exhibits, that the museum has the greatest opportunity to be of truly unique service to education. With over-all design left out, the museum differs from the playroom only by size, cost, and a slight touch of reality.

It may be well to recapitulate our conclusions up to this point. The real or potential virtues of the museums as educational institutions lie in (1) their ability to abstract and perpetuate revealing but fleeting situations, (2) their command of a genuine third dimension, with free choice of perspective, in their visual demonstrations, (3) their ability to inject a sense of reality into their presentations by the frequent insertion of genuine samples of natural phenomena, (4) their further ability to simulate actual reality in detail as needed, instead of having to substitute different realities for one another, (5) their ability to communicate a sense of the order of things without imposing any order upon the whims and movements of the viewer, and (6) their ability to avoid setting a pace that must be followed by all alike.

When we sum up these virtues and the freedoms they offer, we realize that the museums, which according to their total attendance are certainly to be classified as mass media, are the only mass media offering completely individual educations to all who seek it, in all respects in which the individual can be free and unique with regard to what, when, how, and why he learns. Anything that subtracts in the slightest from these virtues and freedoms also minimizes the museum's services to society. This is not to say that every technique and device that do not in themselves possess or support all of these merits must be avoided everywhere and at all cost. Rather it is a question of using sound judgment, taste, and sense of proportion to see that true beauty is not concealed by blatant costume jewelry. As a case in point, we might consider the Guide-a-Phone.

The American Museum of Natural History is rightly proud of its part in

[1] See also Helen V. Fisher: CURATOR, vol. III, no. 2, pp. 186–187.

the development of this instrument and in its introduction to the public. But before the walkie-talkie enabled us to bring our message silently to each individual listener, without a sound to disturb our other visitors, the writer was sometimes criticized for his objections to having similar "canned" lectures delivered in our exhibition halls over the loudspeakers of a public-address system. There can be no question that the Guide-a-Phone adds immeasurably to the museum experience of a large number of our visitors, especially on their first visit. But it is equally certain that the same information vocally forced upon the ears of all, regardless of previous knowledge, understanding, interests, and purposes would destroy one of the museum's greatest educational assets, the freedom of each to contemplate what he sees according to his own speed, inclinations, and point of view.

In this connection two things must be borne in mind. One is that the educationally most valuable visitor is the repeater, who returns again and again to deepen his appreciation of what the museum has to offer. Regardless of the subject, a single visit can hardly be said to provide more than light entertainment for an idle hour—commendable and mildly instructive in spots, but of no great consequence as an education. The effects upon the repeater must therefore be of prime concern to us in all our efforts to increase the effectiveness of the museum as a teaching medium. Nevertheless, it is one of the commonest errors among museum workers to plan as though an exhibit were meant for a single experience, and to judge by the impact of first impressions only. The error is even more common among museum friends. In our example nothing, certainly, could be less enticing to a repeater than an inescapable canned lecture already heard before, and perhaps again and again.

A second consideration is that no mechanical teaching device demands greater regimentation, and induces greater passivity of mind, than does the mechanized delivery of a recorded lecture. Speed, contents, sequence, and point of view are all irrevocably fixed in advance, beyond influence by the temporary audience. All inducement to critical alertness is lacking, because there is no opportunity to give expression to critical thought through the questions and objections that can be voiced before a teacher or "live" lecturer.

Since it is the declared purpose of educational mechanization to make the acquisition of knowledge an easier task, there is always a great danger that such methods, when carried beyond initial stimulation of interest, may weaken our intellectual fiber by developing a craving for easy learning and a disinclination towards the individual initiative and the personal effort required for a deeper understanding. We do not train a nation to become fighters, workers, and athletes by giving it soft pillows to rest upon. Nor do we develop a nation of thinkers whose mental capacities will insure the success of government by the people, if we make them rely

too far upon thoughts presented by a mechanized voice instead of ideas gained by their own efforts. We simply prepare them for the blind acceptance of any future propaganda to which such methods might equally well be applied.

Nevertheless, we must, of course, use recorded voice and all other techniques available to us to the extent that they increase our ability to communicate without detracting from what we teach or destroying our ability to contribute to the development of independent thought. Whatever we do, let us always protect the serenity and freedom from inescapable compulsions in space or in time that have given the museum the paradoxical role of our only educational mass medium for the promotion of true individualism.

modern principles of museum administration

"A. SINNIK" [FREDERIC AUGUSTUS LUCAS]

When I began my career at The American Museum of Natural History in 1926, Frederic A. Lucas had recently retired as its Director. But he was too lively a man and too enthusiastic about the Museum to which he had devoted a long life to sink into "innocuous desuetude" on relinquishing his active duties. He was, therefore, very much in evidence around the Museum on my arrival there, and I came to know him slightly. The full length of the curatorial ladder and about five intervening decades of experience made anything more unlikely. Nevertheless, even a slight knowledge of this white-haired, twinkling man was enough to have fixed in my mind an

image of a gentle, lovable, and essentially kind person. I now can see from the little piece that follows that there was a bite to his character as well. The shafts he lets loose find their mark with accuracy and sting, but in a curious way without rancor or malice. His first-hand knowledge of a variety of museum positions, gained from his occupancy of them, lends his comments an indubitable note of authenticity and justifies his tongue-in-cheek exaggeration.

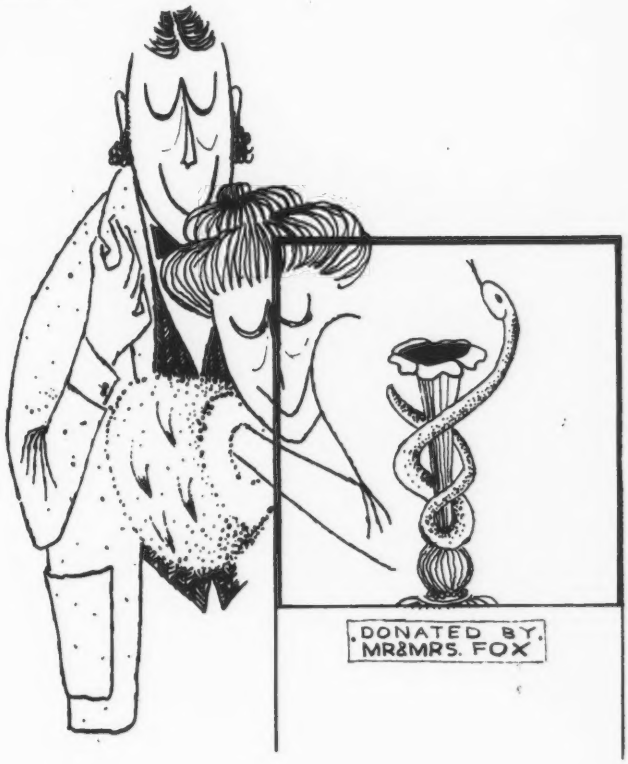
Let the contemporary museum world feel as superior as it likes about the Lucas of fifty years ago. Maybe some of his comments will seem to be old-fashioned and even inappropriate to the museum of today. But I venture to guess that most experienced readers will find that an astonishing proportion of his barbs still get deep enough under the skin to evoke from us a wry, if smiling, recognition . . . *Harry L. Shapiro*

It is now (1920) twenty-five years since the publication of Dr. Goode's "Principles of Museum Administration," and important changes have naturally taken place during that time. Moreover, Dr. Goode's "Principles" were the opinion of one individual only, while the present paper is based on the views of various classes of museum workers as regards each other. By this Galtonesque method it is possible to get a composite view of museum methods representing the ideas of the majority.

DEFINITION OF A MUSEUM

A museum is an institution for the preservation and display of objects that are of interest only to their owners. It is also a place where paintings,

bric-a-brac, trophies of the chase, etc.,
may be deposited whenever their owner
wishes to have them stored temporarily
without expense to himself.



OF THE DIRECTOR AND HIS DUTIES

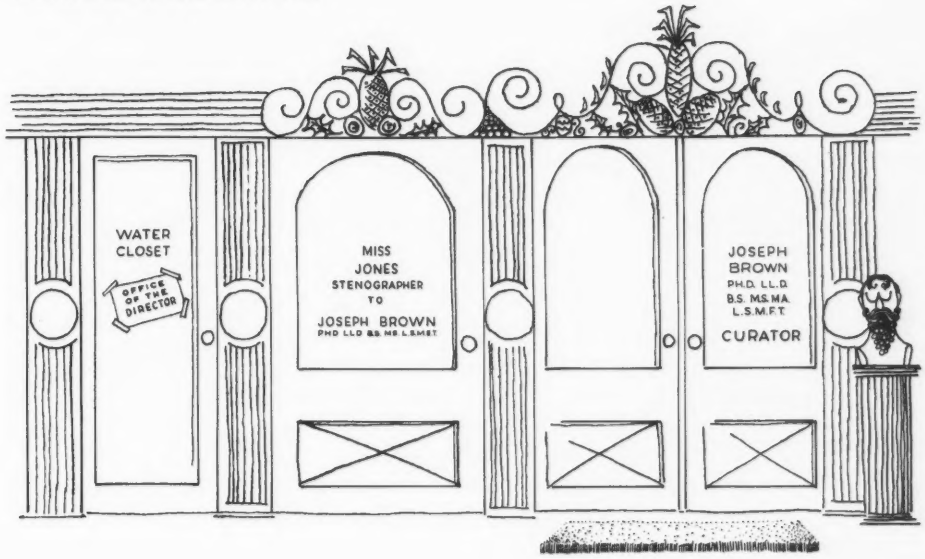
The director is appointed to carry out
the wishes of the curators, to sign
requisitions therefor, and to take steps
to provide necessary funds for the purpose.
He should see that each curator gets
what he wishes, while at the same time
getting no more than the other curators
think he should have. In practice these

duties are sometimes found to conflict.
Another important duty of the director is to receive applications for positions from persons who have no knowledge of museum work, and to consider the purchase of worthless specimens.
The director has no rights, but it is customary to allow him certain privileges and the curators will see that these are not abused.
No director is qualified for the position he holds. This applies equally to anyone who may succeed the present incumbrance.

CURATORS AND THEIR DUTIES

Curators are to be selected for their lack of interest in the public.
They should preferably be engaged in some research of personal interest, if possible on some abstruse subject that cannot be finished during their lifetime and will be promptly rejected by their successors.
It is also desirable that such research should entail the purchase of expensive books and apparatus (see paragraphs under library).
The principal duty of curators is to make requisitions for supplies and services; it is not, however, required of them that they should employ their leisure time to do this nor expected that they will sit up nights to draw up requisitions.
If a curator calls at the office of the director when the latter is absent, he should leave a requisition on the desk.
Each curator is to be provided with a private office, and an office for his stenographer.

If any room is left, it may be used for the director's office. They should have assistants to look after the museum work and laborers or attendants for the care and arrangement of material on exhibition.


WATER CLOSET
OFFICE OF THE DIRECTOR
MISS JONES STENOGRAPHER TO JOSEPH BROWN PHD LLD BS MS L.S.M.F.T.
JOSEPH BROWN PH.D. L.L.D. B.S. M.S. M.A. L.S.M.F.T. CURATOR

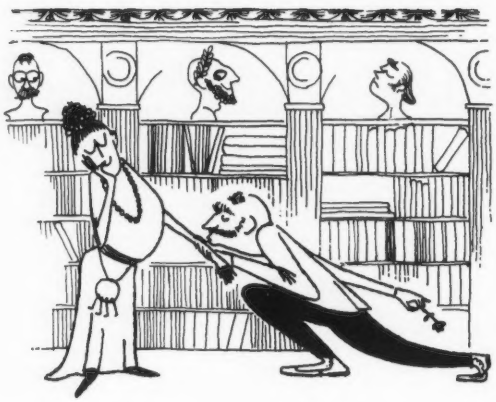
OF THE BURSAR OR TREASURER

The bursar or treasurer is appointed to delay the prompt payment of bills. His chief pleasure is informing a curator that his allotment has been overdrawn, or that no funds are available. This in turn affords the curator a certain sad satisfaction, as it is *prima-facie* evidence of dereliction on the part of the director in failing to provide necessary funds (see section relating to the director).

If purchases are within his jurisdiction, the bursar should see to it that these are not made too hastily.

OF THE LIBRARY & THE PURPOSES THEREOF

The museum library is a place where books may be carefully concealed from curators. The librarian should see that books particularly desired by curators are not purchased. This stimulates the interest of the curators in the librarian, and a curator would be surprised and disappointed at finding any book he especially needed.



Curators on their part will be careful to ask for rare or expensive books. If these are obtained, the curator should then decide that they are unnecessary.

Curators should take care not to return books promptly, especially if they are likely to be needed by other departments. This leads the various departments to take an interest in each other's work and may elicit candid and instructive comments thereon.

PREPARATORS OR PERPETRATORS

The aim of the preparator or, as he is sometimes more accurately styled, perpetrator is to prepare series of unfinished objects; hence he should not complete any piece of work. In accordance with the principles laid down under General Considerations, as much time as possible should be spent in seeking for new and complicated methods of work. His opportunities are greater in

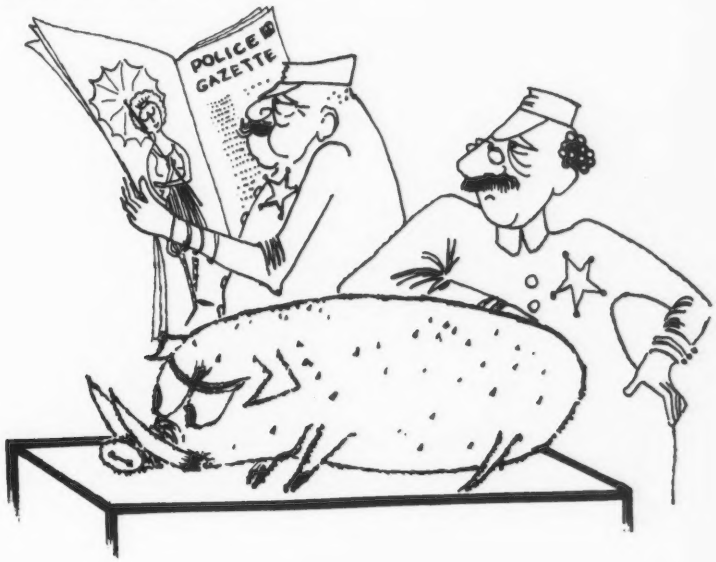
museums of natural history than in museums of art, though the work of the natural history perpetrator is often termed art because it has no resemblance to nature.

An important duty is that of carefully removing labels from objects that pass through his hands; if they cannot be mislaid they should be transposed. This gives the curator or his assistant stimulating employment and occupies time that might otherwise be wasted in what is termed research.

ATTENDANTS

The principal duties of attendants are to read the daily papers and discuss family affairs with one another. Any time not thus occupied is at the disposal of the nearest curator.

The elevator operator shall be provided with a comfortable seat

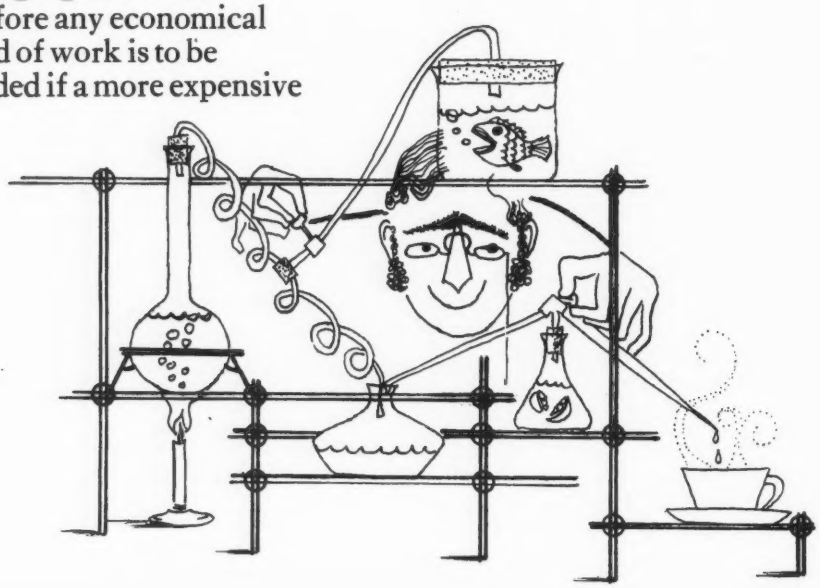


and interesting literature. He shall make it a part of his duties to discuss personal matters with attendants on the various floors, and officers and visitors should not interrupt him when so engaged.

GENERAL CONSIDERATIONS

Each and every department of a museum is superior in importance and methods of administration to any and every other department. There is a seeming paradox in this, but it is practically the only point on which all curators are agreed.

As a corollary to this, it is not expected that any curator should take any interest in the museum as a whole. Expense and time, especially the time of mechanics, should never be considered in planning exhibits or rearranging collections. Therefore any economical method of work is to be discarded if a more expensive



method can be devised.
Rules and regulations should
be made to conform to the convenience
of the employees; if this cannot be done,
it shows gross incompetence on the part
of the director.

SUGGESTIONS TO VISITORS

No visitor should harbor the delusion that the director or, for that matter, any member of the museum staff ever has anything special to do.

Visitors wishing to see the director on unimportant matters should preferably call about lunch time or just before he wishes to leave the building.

Visitors really desiring information should be treated with silent contempt.

Any visitor not finding on exhibition any object he may wish to see, displayed and labeled as he thinks should be done, is requested to file a complaint with the trustees.

In most occupations people are supposed to know something about the work in which they are engaged, but with museum work it is different, and the less acquaintance one has with museum administration, and the fewer facts he has to interfere with his theories, the better.

Hence visitors should not hesitate to offer museum officers advice—it is stimulating to the visitor and enlightening to the curator.

P.S. To quote from a recent book, "The trustee's duty is to have the museum run, not to run it." "Within a museum the trustee is always right."

This country of ours is in the midst of a great artistic and cultural explosion. There are today more than 1100 symphony orchestras in the United States. There are between 4000 and 5000 museums as compared with fewer than 2500 in 1938. Last year our citizens bought more than 1,379,000,000 books, about 350,000,000 of them paperbacks. They purchased in excess of 472,000,000 phonograph records. They made 60,000,000 visits to historic sites, a much greater attendance than all organized baseball enjoyed.

Philadelphia has had more than its share in this movement. The vast Independence Hall redevelopment is now under way, thanks to the enlightened cooperation of federal, state, and municipal groups. Philadelphia is an important national historical shrine. The little green country town laid out by William Penn became one of the largest and most influential provincial cities of the whole British Empire. In these days we are interested to observe that, under the leadership of such men as Benjamin Franklin, James Logan, David Rittenhouse, Benjamin Rush, and John and William Bartram, it was the scientific capital of the thirteen colonies. But, even more noteworthy, it was the place where the founding fathers risked their lives, their fortunes, and their sacred honor in signing the Declaration of Independence. Here, later, they beat out the basic compromises that made the Constitution of the United States a system of government flexible enough still to work after 175 years of turbulent party conflict and rapid industrial growth. No wonder that nearly every American longs to visit Independence Hall and its Liberty Bell.

What is the educational process that takes place at a historical shrine—this new kind of voluntary education often called interpretation? It has no set curriculum, no formal classrooms, no didactic textbooks, no final examinations. Tourists are usually in a relaxed frame of mind, on vacation, perhaps with their children, and receptive to absorbing knowledge about what they are seeing. But they are not a captive audience; if they become bored, they get into their automobiles and drive off to some other, more promising place.

What can past experience tell us about the technique of teaching history through museums or in three dimensions? Philadelphia is an excellent place to begin because, although the first American museum was founded at Charleston in 1773 to collect materials for a natural history of South Carolina, Philadelphia was the museum center of the country in the late eighteenth, and well into the nineteenth, century.

Pierre Eugène du Simitière, a native of Geneva, was probably the earliest American museum director. He was living in Philadelphia when

(Editor's Note: Adapted from a speech to the Annual Meeting of the Philadelphia Convention and Visitors Bureau on May 10, 1960.)

the American Revolution began. Imbued by a great dream of documenting the story of that momentous upheaval, he painted miniature portraits of Revolutionary heroes and gathered a curio cabinet which included Indian artifacts captured by General Sullivan's expedition against the Iroquois, a Hessian grenadier's brass cap ornament, and the shield, sword, and lance carried by Captain André as a white knight at the Meschianza, the elaborate party staged by Sir William Howe's officers when they held Philadelphia. That perceptive French traveler, the Marquis de Chastellux, in the 1780's found du Simitière's collection "small and scanty" but "greatly celebrated in America where it is unrivalled."

Upon du Simitière's death in 1784, his American Museum on Arch Street was sold off in thirty-six lots, most of the collection going to Charles Willson Peale, accomplished artist, student of nature, and a kind of universal scholar. During the Constitutional Convention, he exhibited a primitive type of moving pictures in his Philadelphia gallery. Entitled "Perspective Views with Changeable Effects; or, Nature Delineated and in Motion," the show lasted for two hours. An assistant with screens and lights made the scenes appear to move. The program included portrayals of Walnut Street at dawn and at nightfall, hell itself, its evil mood enhanced by appropriate music, and the sea battle between "Le Bonhomme Richard" and the "Serapis."

During the next half century a leading attraction of the city was Peale's Philadelphia Museum, for many years housed on the second floor of Independence Hall. Most of its 269 paintings and prints, chiefly of the founding fathers, were done by Peale or members of his family. A whole room was devoted to *Mastodon* bones, many of them excavated by Peale near Newburgh, New York. A stuffed bison represented the herds still grazing the western prairies. Peale's sons Rembrandt, Raphaelle, Rubens, and Titian served as assistants in the Philadelphia institution or established branches in Baltimore and New York.

The Peales tried to keep their museums scientific and educational. They classified natural history specimens according to the Linnean system, mounted and preserved birds and quadrupeds in realistic poses with carefully painted backgrounds, and displayed living animals and reptiles. "Insects too small to be examined with the naked eye" were "placed in microscopic wheels." Lectures, magic-lantern shows, and demonstrations interpreted the collections. The museums stayed open at night, developing their own pioneer systems of gas lighting at Baltimore and Philadelphia.

But the Peales were dependent largely upon admission fees for their living. At first they charged visitors a shilling and then later twenty-five cents. In 1816 Peale's Philadelphia Museum had a gross income of $11,924, indicating total paid attendance of nearly 48,000. The growing financial

needs of the sons drove them to include curiosities and freaks in their displays, and calling them "rational amusement" did not excuse their unscientific character. At Philadelphia visiting farmers enjoyed the exhibit of a stuffed, five-legged, six-footed, two-tailed cow giving milk to a two-headed calf. At Baltimore crowds applauded J. Tilley, the celebrated glassblower, Signor Hellene, the Italian magician, a troupe of Indians, and an armless woman who performed incredible stunts with instruments held between her teeth.

The Peale museums went downhill rapidly after the father's death in 1827, partially because the sons were not so dedicated to an educational ideal. The Baltimore and New York institutions were bankrupt before Phineas T. Barnum took over John Scudder's American Museum in New York at the end of 1841. This master showman was determined to make his fortune by amusing and even bamboozling the public, and he never allowed truth to stand in his way. By 1845 the Philadelphia Museum had failed, and Barnum eventually acquired much of its collection as he did also the holdings of the Baltimore and New York branches.

Barnum's American Museum had more than 600,000 accessions, including a national portrait gallery, panoramas of the Holy Land and statues of Biblical characters, a series of waxwork figures showing the horrors of intemperance, and an anatomical Venus (one shilling extra). Barnum perverted still further the educational image of the museum, though he provided plenty of lively amusement. "Industrious fleas" performed, and three serpents were fed their noonday meals in front of the crowds. Other spectacular features included General Tom Thumb and assorted midgets, giants, and bearded ladies, Chang Fong, the Chinese juggler, a dog that operated a knitting machine, and two white whales swimming in tanks of salt water. Barnum's traveling circus developed from this start.

The general museum, with its portraits hung frame to frame, three or four rows deep, and its crowded glass cases of assorted natural history specimens and antique relics, had failed to attract widespread public interest and support. These museums often collected the raw materials of history but had not yet learned to use them effectively. Nor did historical organizations, such as the Historical Society of Pennsylvania founded at Philadelphia in 1824, appeal to a large audience. A few local historians, antiquarians, and genealogists took control of these historical societies and usually made them research libraries instead of museums. The public at large preferred penny arcades, dwarfs and freaks, the popular theater and the exciting circus, and later baseball and organized horseracing.

In the meantime, however, a new kind of historical museum was arising. This was the historic building associated with some important event or personage. The first of these historic houses to open its doors to the public was the Hasbrouck House at Newburgh, New York. It had been the head-

quarters of General Washington at the time he indignantly rejected the suggestion of some of his officers that he become king of the newly independent United States. This house was purchased by the State of New York in 1849 and opened as a museum under the custody of a local committee. Ten years later Mount Vernon, Washington's plantation home, was placed on public display by the Mount Vernon Ladies' Association of the Union after both the Federal Government and the Commonwealth of Virginia refused to purchase it. And by 1876 Independence Hall had been repaired and spruced up to attract throngs of visitors who came to Philadelphia for the great Centennial Exhibition.

The early historic shrines were not as we know them today. Visitors could obtain some idea of the past by observing their architecture and reflecting upon the great men who had once walked about them. Yet the structures contained many historical anachronisms and were neither carefully preserved nor repaired. Clever landscaping to provide a beautiful setting and enhance the impact of the buildings was almost unknown. Interiors were overflowing with too many paintings and with heavy cases filled to the brim; a photograph of Independence Hall in the 1870's shows that the room in which the Declaration was signed had become a crowded receptacle for much antique bric-a-brac.

In 1924 the opening of the American Wing of the Metropolitan Museum of Art in New York made the authentically furnished historical room known throughout this country. Colonial Williamsburg, in 1926, began to restore with painstaking care the major part of a colonial village. Its exhibition buildings opened to the public were furnished as accurately and completely as intensive research would permit. About the same time, Greenfield Village in Dearborn, Michigan, following the lead of the Scandinavian folk museums, began to assemble historical buildings from England and the United States. They were furnished authentically but placed in a readily available village setting of no historical importance.

The outdoor historical museum grew rapidly, until there are some 1500 in the United States today. One reason for their great popularity was the Industrial Revolution which produced the automobile and abundant leisure time, with a shorter working week, paid vacations, and early retirement. Perhaps a more fundamental cause of growth was an increased interest in our national origins and our basic political institutions, accented by world conflicts, both hot and cold. The outdoor museums forced a new appraisal of indoor museums, which led to refinements of the exhibition techniques of both with resulting mutual benefits.

These historic houses and villages somewhat haltingly discovered a powerful new principle of educational motivation. They learned how to create in their visitors historical mood through sensory perception. Such a mood may arise at Colonial Williamsburg, for example, from seeing the

flame of a candle flirting with its mirrored self in a crystal chandelier, smelling leaves smoldering in a cobblestone gutter, hearing the minor chords of the folksinger's guitar as he recites his sad ballad, tasting the horehound drops in the odoriferous Apothecary Shop, hefting the heavy greased musket at the Guardhouse, or feeling kinetic exhilaration in the intricate steps of a country dance. These sensations take visitors back to their childhoods, remind them of experiences buried deep in the subconscious, and foster a nostalgic feeling of having passed this way before.

This historical mood was perhaps what the Peales had needed. Charles Willson Peale had been such an enthusiastic, ingenious, and altogether charming personality that he had been able to interest many of his contemporaries in the more sober disciplines of history and natural science. When vaudeville and freaks were introduced into the museum mixture, however, they were not effective. Showmanship in itself was not enough; it might amuse for a few minutes, but it led to a dead end. Historical mood impressions are different. If truthful and convincing, they attract people naturally. They make us wish to understand more and more about a past way of living. Generating historical mood or putting life into history is an efficient educational technique. It has proved its value again and again in the learning process.

Such a place as Colonial Williamsburg, Old Sturbridge Village, or Mystic Seaport must carefully analyze the slice of history it wishes to teach. Recreating authentically the environment of the chosen historical period will stir the imagination of visitors. Perfection of detail in buildings, landscape, and furnishings will transmit a sense of living in another age; the sculptural quality of grass, shrubs, and trees, the fragrance of flowers, the ticking and chiming of clocks, the warmth of a fire blazing in the fireplace, coats hung in the closets, and half-filled wine decanters are all convincing details.

No matter how skillfully recreated the historical environment, something more is required to bring history to life, to make it a real force in the minds of the visitors. Homes, gardens, taverns, shops, town halls, churches, and schools are important, but so also are the ideas and feelings of the men and women who once occupied them. To understand these earlier Americans we must know their political aspirations, how they made a living, their educational, religious, and social customs, their amusements, and, insofar as possible, their very thoughts.

This understanding is achieved, at Colonial Williamsburg, partially from perceptive guides or hostesses or teachers who take the visitors about. Incidentally, women are especially excellent in this role. Historical research supplies these front-line interpreters with subject matter. They must know the physical environment that people see and ask questions about, but they must also have at their command human interest materials

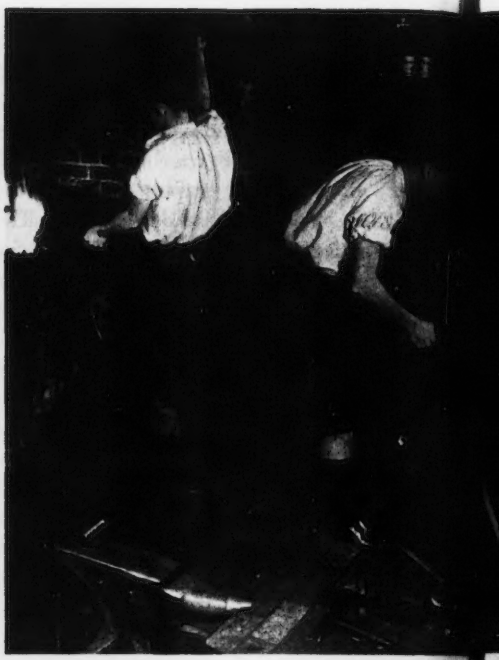
that emphasize colorful personalities, lively happenings, important documents, and underlying concepts. These teacher-guides need to possess personal warmth of communication; they should like people and consider their interpretation of history "an act of love toward humanity, not a specialized message to the initiated few." Well-prepared, wise, flexible, unrehearsed, they should tailor their presentation to groups of bustling experts, tired and faintly interested vacationists, or wriggling, bright-eyed school children. These school classes are especially important, because children have longer to profit from the historical perspective and the inspiration taught them than do their elders. School groups, properly prepared, offer an ideal learning situation; their background of classroom study can be joined effectively with interpretation on the spot.

All good interpretation involves audience participation, even the warm, live teaching just described, but as a general rule, interpretation becomes more convincing when it involves some kind of activity other than mere passive listening. Thus a blacksmith hammering out iron horseshoes or a weaver operating a shuttle and batten seems more alive than a guide explaining these two crafts in words. Similarly, a well-performed concert of period music or a company of players acting an old play gives overtones of understanding that a simple explanation can never achieve.

Actual activity on the part of the visitor is important. Exploring a historical village should be fun. In Williamsburg walking along a narrow colonial street almost overtopped by live oaks, brushing the dark green box bushes bordering a footpath through pleasantly clicking wooden gates, or smelling wood smoke at dusk and half expecting the little houses with their cheerful lights and hum of voices actually to yield up eighteenth-century men and women: these are experiences not soon forgotten.

Then there are the taverns serving food cooked after old recipes, even though twentieth-century visitors have certain inalienable rights that include unauthentic pure food laws. The crowded cozy rooms, the candlelight, the yard-square napkins, and the strolling costumed singer all add to the feeling of belonging to another age. An unusually pleasant experience is a carriage ride in the high-wheeled coach with the squeak of the leather springs, the nervous start of the high-spirited horses, and the pungent odors of a kind of transportation that has almost disappeared today.

People have always liked to play games, and those of another day are still amusing. Indoors, at Williamsburg, there are put and loo, gambling card games; lotto, similar to our modern bingo or keeno; and goose, a board game comparable to parchesi. Outdoors there are bowling on the green, sack races, and pitching pennies. A militia drill, with its real fifes and drums, its musket shots, and its pervasive smell of black powder, is a noisy and amusing affair. Vigorous country dances are suited for either in-



doors or out. In Williamsburg these activities were popular during the period called "Publick Times," when the quarterly meeting of the courts brought planters to the Virginia capital, and Publick Times today are recreated on special occasions and for two weeks at Christmas.

A guidebook and other publications provide another kind of interpretation. Well-written, attractively illustrated, and persuasive books are powerful tools of learning. They constitute continuing links between a historical project and its visitor, friendly ambassadors of long tenure.

The actual re-creation of dramatic incidents or the portrayal of historical characters cannot be left to audience participation but demands skilled theatrical talent. Motion pictures, plays, pageants, or *son et lumière* spectacles are impressive ways of bringing history to life. Colonial Williamsburg is proud to have pioneered in the development of an orientation program designed to prepare visitors for their journey into history. This introduction takes the form of a wide-screen motion picture entitled "Williamsburg, The Story of a Patriot." Its theme is the choice that faces a young planter in the Virginia House of Burgesses: Should he vote to instruct the Virginia representatives in the Continental Congress at Philadelphia to move for independence? Or should he return to England as did his more conservative friends? This film runs about thirty-five minutes and helps the visitor to see the historical forest instead of the trees: the concept of self-government underlying the thousand details of streets, buildings, and furnishings. It peoples Williamsburg with Patrick Henry, George Wythe, Peyton Randolph, Washington, Jefferson, and their compatriots. Thus as the visitor walks about the restored town, he sees his surroundings with new eyes; at the Capitol he may wish to sit where he saw Patrick Henry sit in the Hall of the House of Burgesses.

Paul Green's outdoor symphonic drama, "The Common Glory," is staged at Williamsburg at night during the summer. It employs acting, dancing, and music to tell the story of Thomas Jefferson. A different kind of pageantry is the *son et lumière* spectacle developed recently in France. It offers promising possibilities for use by American historical projects. In these spectacles, the audience does not see actors, but its imagination and emotions are stirred by listening to a stereophonic sound track carrying dramatic voices and music, and by observing the suggestive and artistic use of light on castles and gardens. At Les Invalides in Paris, the story of the return of Napoleon's body is told, and each season many loyal Frenchwomen faint away as the stone is heard to drop into place over his sepulcher. If an interpretation program is measured by the intensity of the personal experience it affords, this one surely would get a high score.

The educational programs of historical museums and historic houses and villages have come a long way since du Simitière and the Peales began their work in eighteenth-century Philadelphia. More than 150 years of

experimentation have made clear several basic principles:

1. A detailed, long-range plan must be adopted. It should consider both the physical environment and the educational purposes. The period of history to be interpreted must be carefully selected, clearly defined, and thoroughly studied.

2. Abundant research is the life blood of authentic preservation and restoration of historic structures and of their excellent interpretation. The research is often the effort of a team of historians, architects, archeologists, and curators. It guarantees the honesty and truth of the project.

3. When the historical environment is properly preserved, restored, or assembled, it should be used to tell visitors the story of a historical period. That interpretation will be most effective which produces historical mood, a combination of convincing, detailed, physical environment, warm personal teaching, meaningful introductory orientation, a high degree of audience participation, or some kind of dramatic presentation.

Henry James described the effect of good interpretation as long ago as the 1880's when he visited restored Carcassonne, in southern France. As he walked around the great double wall, its big gray towers contrasting with the bright green grass of the filled-in moat, he could imagine its busy life as a fortified town under the Romans and Visigoths and then later in the twelfth and thirteenth centuries. At the end of the day he treated himself to a last trip around the old town, which he described as follows:

> In the warm southern dusk it looked more than ever like a city in a fairy tale. To make the thing perfect, a white young moon, in its first quarter, came out and hung just over the dark silhouette. It was hard to come away—to incommode one's self for anything so vulgar as a railway train; I would gladly have spent the evening in revolving round the walls of Carcassonne.

The Role of the University in Education Towards Museum Careers

HUGO G. RODECK, DIRECTOR
UNIVERSITY OF COLORADO MUSEUM

The time may be approaching for decision in the matter of what has usually been called "museum training." Commonly translated, this means preparation of inexperienced persons for positions in museums. The subject appears to be of equal interest to those who feel impelled to take part in the preparation of young people for museum careers, and to those who are interested in obtaining the services of new personnel who are knowledgeable about museums. This apparent common interest, however, does not seem to lead directly to a commonly agreed-upon set of objectives, of methods, or even of content for the guidance of those who wish to institute or contribute to the development of museological education.

Such lack of agreement on a few fundamental principles upon which we might begin the formulation of plans suggests that we may not all be talking about the same things, and this in turn suggests that perhaps we need both to define our terms to our common satisfaction and to analyze our problems to determine whether we may be dealing with a compound phenomenon which must be reduced to its components before it can profitably be discussed.

One of the first and most obvious sources of possible disagreement arises from the distinct meanings of "training" on the one hand and what we ordinarily call "education" on the other. One of our more articulate museum colleagues has said, for example, that "teachers are trained in schools, then educated in the museums." One immediately questions whether, if such actually were the case, both school and museum have not forfeited their more appropriate functions one to the other. If schools have anything to offer the cause of museology, it would normally be education in the sense of general orientation and an understanding of the history, philosophy, and objectives of museums. Training, on the other

hand, while it might be begun in school, would normally be perfected in actual practice in the museum, if by training we accept the dictionary definition of "exercise or practice to gain skill, facility, or endurance." These two concepts, even (or perhaps especially) as they apply to museology, merit the most precise and careful use, because, if they are confused, they may lead not only to fundamental misunderstanding but may actually have an unintentional influence on our thinking about the problems of the preparation of museum personnel.

It appears at times as if uncritical use of the two words may lie at the bottom of the opinion, held by the administrators of some of our larger museums, that the universities can serve no useful role in preparing personnel for their large and diversified staffs. The universities are, or at least most of them are, not only unprepared and unequipped to *train*, but are for the most part unwilling to do so. Their function is generally considered to be primarily to develop an intellectual climate in which any necessary subsequent training can go on under the most enlightened, farsighted, and effective self direction. This will need to be referred to again later. In passing it may be noted that it is unlikely that the large museums actually prefer trained to educated recruits.

Another fundamental monkeywrench often found in the machinery of museum communication is the uncertainty about what any given museum speaker means when he says "museum." He may have in his mind's eye a one-man, diversified operation, or he may be thinking of a multi-staffed, highly specialized institution in which one hand may have no conception of what any other is doing. To attempt to work out a *training* program for these two extremes simultaneously would be impossible, but their ideals of proper museum education should be essentially the same.

A very recent article[1] discusses whether there actually is such a thing as a "museum profession." It includes an analysis of the kinds of activities that go on in museums and, not surprisingly, these often show more similarity to what goes on in other places, notably universities, than within the museum field itself. Parenthetically, this verifies an observation that has been made many times, but without such conclusive documentation, namely, that museums are much like universities. From the data presented, the conclusion is inescapable that the most successful preparation for museum employment is a college education. The National Research Council report by Mayr and Goodwin[2] says:

[1] Parr, A. E., "Is There a Museum Profession?," CURATOR, vol. III, no. 2, pp. 101–106, 1960.

[2] Mayr, Ernst, and Richard Goodwin, "Biological Materials," Washington, National Research Council, Division of Biology and Agriculture, Biology Council, March, 1955.

> Much of the staff of museums in former generations consisted of volunteers, amateurs, or part-time workers. Few of them had an adequate training as biologists. This has changed radically within the last 20 or 30 years. A Ph.D. in biology is nowadays on the whole a prerequisite for a curatorial position, and this includes not only training in systematics itself, but in other relevant branches of biology such as genetics, comparative anatomy, and statistics.

In other words, for one of the most highly critical aspects of our larger museums, curatorship, as well as for many of lesser size, university education is considered to be the best preparation. This situation clearly arises from the fact that scientific collection, preparation, and research are the same whether carried on in a university, a museum, or at home. Similarly, building maintenance, at perhaps the opposite extreme, is not greatly different in a museum than it is in a department store. To the degree that a museum utilizes certain talents unmodified from their "civilian" applications, those who happen to practice them in museums are not museologists and are not members of a museum profession in a particular sense. Their preparation requires no museum orientation beyond the most elementary, nor is their museum performance likely to contribute materially to the development of that distinctive cultural institution which most of us have fairly clearly in mind when we speak of a "museum" in a generic sense.

At this point it might be profitable to remark that when we analyze museum operations and find a wide variety of activities which are just like those practiced in other places, we may forget the entity we analyzed in the first place. It is as if we analyzed sugar to find carbon, oxygen, and hydrogen and came to the conclusion that there is no such thing as sugar. While we may compare the activities of museums with those of other institutions, the museums still exist, are still distinctive and recognizable, and retain the same differences from the institutions to which they were compared.

If we are to design a program of education for museum operators, we must see the shape of the institution for which we are designing. If it is complex in respect to the talents it requires, it is in no way different from other professions such as medicine or law, or from business, manufacturing, or government. It is the wider concern we must educate for, not the particular specialty in which each individual must find his greatest usefulness. If we cannot recognize this shape of the profession in the preparation of the practitioners, perhaps we should examine the institution itself.

Actually, it seems that the shape of museology is becoming clearer and less ambiguous every day, particularly in the last few years. Perhaps the most important agencies in this clarification have been the publications of and for museologists. The answer to the question of what is museology today is the contents of CURATOR, and *Museum News*, the *Museums*

Journal, the *Museologist,* such books as "The Organization of Museums," the "Handbook for Curators," and recent bibliographies, both American and foreign. Museology is the things that are discussed in these and a multitude of other sources which are appearing at an increased rate. There should no longer be much mystery about the content of museology.

One of the greatest obstacles to communication in talking about museums is a tendency to equate museology with curatorship. By now it should be clear enough that curatorship goes on in museums, but that it is not all of museology. Some of us think that collections and research may be the most significant activities that go on in museums, but by saying that they do go on *in museums* we accept a distinction between the museum and other research institutions. A person with a doctorate in natural science whose interests are systematic or collection-oriented is educated for curatorship. He knows how to collect in his own field; he knows what and where to collect. He knows how to preserve the materials of his science and how to identify and classify them. Finally he is prepared for research in them, and for interpretation of them on no matter what lofty level. This is curatorship. These people come from the universities, and we need not worry about their training.

We often do, however, need to concern ourselves about whether they understand all the implications of museums. Implicit in some of the museological literature, and very explicit in some, is a certain restlessness in curatorial ranks arising from the conflicting demands of research and of interpretation upon a curator's time. Some of our most productive curators resent the time they are required to devote to interpretation on the public level, which is necessarily subtracted from that which they may prefer to devote to interpretation on a professional level. There may be ways of circumventing such a conflict, especially in the large museums where it may be possible to have equally qualified persons for each of these jobs, but in most places it will be necessary for curators to do both for some time to come.

One of the ways in which it might be possible to minimize the internal conflict of curators would be to give them, as part of their professional equipment when it is apparent that they are in some danger of getting into museum work, some intimations of museology—some idea of the relationship of their profession to the institution in which they are to work. It is difficult to credit a recent statement that "zoologists may not know how to preserve their materials," but it does seem to be true that many do not know how to display them. A university course in the principles of museology might help to reduce the conflict between research and public interpretation and might fill in some technical gaps as well.

Both actual experience and theoretical considerations suggest that the best entrance to the museum world is by way of curatorship. Most of our

leading museum directors and theoreticians were or still are curators who learned the broader principles of museology from experience or from reading or from both. It seems reasonable to suppose that as our concept of the museum becomes more refined we shall have to look for increasingly well-oriented persons to enter our curatorial positions, and to be plucked from thence as soon as they become really productive to take museum administrative posts. Such a process implies that it will be a matter of economy of time and effort if our future curators can get some intimations of museumship along with their education for curatorship.

That these intimations will be philosophic rather than technical is pretty well assured by the nature of the university, which is suggested and at the same time maligned by the accusation of being "impractical." This misnomer for the preferable term "theoretical" tends to obscure the fact that the most imaginatively practical persons are those who best understand the theory. This is true in museology, in which the most practical are often the least imaginative. A current museum short course is described as having "emphasis on the practical application of principles." We should be concerned with the emphasis on principles and trust human experience, imagination, and ingenuity to develop the practical applications.

This brings us to a consideration of the persons we are talking about. I am talking about those who are, will be, or hope to be in museum positions of importance and influence. I am talking about curators and administrators, about present and future department heads and directors. For the purpose of the present discussion, I put technicians and preparators into another category. These can be trained in workshops, short courses, and by apprenticeship in the museums themselves. Their work requires a maximum of practice and relatively little orientation, which is not to deny the importance to museums of these skills nor to overlook the fact that excellent administrators may come through these positions. The paths to success are always multiple, and there is no keeping a good man down, but I am here not concerned with these unpredictable phenomena. I am concerned with the present widespread attempt to devise a program for the early orientation of the majority of those into whose hands our museums will come.

I am concerned with the development of an educational program of truly university caliber for upper-class and graduate students in any and all of the subject fields to which the museum method is of interest—geology, biology, anthropology, history, art, and others. Such a program would be possible only in a university with a first-class museum having most of the features that characterize the fully developed museum today.

It should require a very considerable amount of scholarly library research into the history and philosophy of museums in general. This of

course assumes the presence of the literature of museology. Each student, regardless of his field of academic specialization or curatorial preparation, would be expected to pay some attention to the objectives, problems, and techniques of the other academically unrelated but museologically important fields. Thus art majors would gain some insight into the science museum and its objectives, while the science student would come into contact with the problems of museums of art and of history. Such breadth in an introductory survey could serve to introduce the museum as an institution in such a way as to emphasize its essential unity as a cultural and educational agency, and to stimulate the greatest amount of interdisciplinary fertilization. It should develop in each student a critical and sympathetic attitude with respect to the museum method in other than his own specialized area, which in time might ameliorate the conflicts that occasionally mar the museum world.

The recently activated Conference of Directors of Systematic Collections has adopted statements that clarify the position that museums occupy in our national biological effort. One of these specifically recommends that non-college museums with study collections and research programs adopt standards of academic background, professional competence, and salary range for the members of their curatorial staffs equivalent to those at nearby colleges and universities. This speaks eloquently of the favorable position of those museums which are already on campuses where these desirable standards already prevail and where in many instances there is a wider range of professional competences than is to be found even in some of our greatest museums. It might appear that universities have a positive responsibility for the furtherance of a social function for which they seem unusually well adapted.

In the universities it would not be difficult to inculcate a feeling of responsibility towards the research aspect of museums and their contribution to the objectives of scientists, historians, and the conservators of our artistic heritage, as well as the potential influence of the museum as a powerful instrument for public education. Incidentally, but perhaps of equal importance, it might improve the campus status of the museum, which on most campuses is conceived to be an agency catering to limited interests rather than one having the widest cultural and educational implications. Perhaps if the museum itself can recognize its own potentialities for society, society can more readily be persuaded to accept it.

Following a general philosophical and background orientation with, of course, continual contact with the realities through exercises in the techniques of museums, there should be at least a year's actual participation in the activities of the campus museum, and also in such neighboring institutions, public and private, as might be willing to cooperate.

A program such as is here outlined would surely turn out graduates who

were both professionally prepared in their own special fields of learning and thoroughly oriented with respect to the mission of the museum. If it should be objected that they still were not trained as experts in the manipulative skills of museum preparation or exhibition, I would retort that such training is not what we in the universities are most interested in producing. The question has been asked, "When museum administrators complain about the lack of available trained personnel what kind of training is most lacking? Is it in the field of research, administration, or exhibition?" We believe that it is in the general field of understanding of what museums are, what they are for, and what they may be. We believe that it is the understanding of these things that makes a museologist.

Our best museologists today are biologists, geologists, paleontologists, archeologists, art experts, historians, and educators who, by their understanding of the museum's point of view and methods, and with an appreciation of how these have been applied by differing institutions for varying purposes, have succeeded in shaping an institution that utilizes scientific knowledge, academic insight, historical perspective, artistic and technical skills, and advertising psychology, all woven together in an atmosphere of social consciousness. This blending of talents has produced an impressive series of educational institutions, each of which is unique, but each of which has that in common with other such institutions as to qualify for the generic name of "museum."

A New Casting Medium for Use in Flexible and Rigid Molds

JAMES A. JENSEN, PREPARATOR
MUSEUM OF COMPARATIVE ZOŌLOGY
HARVARD COLLEGE

A search for a new way to do an old job has turned up what appears to be a radically new casting medium. It is not new to the world but rather, as far as I know, new to the field of museum work.

It has a wide range of possibilities, and experiments here have proved it to be particularly valuable in the reproduction of skeletal parts for exhibition mounting. It is extremely light in weight, has excellent structural strength, reproduces good surface detail, and can be cast in different types of molds.

I have extended my experiments and written the present article as a result of the enthusiasm shown by a number of visitors from other institutions. After viewing my first experiments, they have all requested information on the material and the techniques for its use.

Small skulls such as those of *Seymouria* and *Archeria* cast in this medium can be tossed about the room like ping-pong balls. For class-handled study specimens it is absolutely the best medium ever devised.

Because the problem of supporting weight is drastically reduced, the fabrication of a skeleton is a pleasant experience for anyone who has already set up a plaster and bone one. Even if the bony skeleton is incomplete and only parts of it need restoration, the material is still valuable for the reduction of weight.

The material is "rigid-foam" and is produced by the combination of two liquid chemicals. When they are properly mixed and poured into a cavity, the resulting reaction produces an expanding mass of foam which completely fills the void in a few moments and becomes rigid in a matter of minutes. The material thus produced displays an amazing strength per

weight unit, yet reproduces the detail of the mold surface. The rigid cellular structure defies cracking and will absorb a surprising amount of shock. These characteristics make it excellent for exposure to the eager-handed public.

Rigid-foam can be whittled, sawed, ground, filed, sanded, and drilled. It is stable in the presence of solvents such as benzene, acetone, alcohol, lacquer thinner, and turpentine, and is waterproof. It can be colored with any type of paint, or dyed; I have used a simple mixture of shellac and pigment with success. While the shellac is still tacky, talc can be dusted on and rubbed a bit to produce the waxy appearance of many good fossil bones, and can be done far more effectively than is possible on plaster.

It can be cast in rubber as well as rigid molds. It is not affected by the presence of oily substances such as modeling clay and responds well to different separators having a wax or an oil base. Silicones, however, should be avoided.

It is available in different densities, from less than two pounds per cubic foot to about twenty pounds per cubic foot. I have achieved my best results in the range from six to nine pounds per cubic foot. The foams of greater density react more slowly and seem to develop a secondary stretching along the mold surface, impairing the fidelity of detail. The material in the lightest density range foams up rapidly and easily fills all geometric complexities of the void, but its lack of structural strength may result in a poor separation of mold and foam. This depends somewhat upon the effectiveness of the separator used and the thickness of the rubber mold; if the latter is too thick and clumsy it will make demolding difficult.

Rigid-foam is manufactured under the trade name of Boscel Prepolymer by the B. and B. Chemical Company, 748 Memorial Drive, Cambridge 39, Massachusetts. It is available in quantities from a pint to a fifty-five-gallon drum. The price varies but averages about $1.50 to $2.00 per mixed pound. The prepolymer and the catalyst are purchased unmixed, of course, in separate metal containers. This price compares favorably, per liquid gallon, with other types of plastics on the market. In fact, it is more reasonable when the net volume is viewed in the cast product.

Arnold Lewis and I were engaged in "spare-time" mounting an *Antrodemus* skeleton for Princeton University, when we began experimenting with the various synthetic materials available on the industrial market. The problem was to find a substance that would greatly reduce the weight of the restored skull. If reënforced plaster was used, a pectoral support would be imperative, but if a much lighter material could be found this support might be eliminated. We discovered the interesting material called "rigid-foam" produced by the B. and B. Chemical Company, and, because of their interest in its application in a new field, we received the

Fig. 1

Fig. 2

Fig. 3

kind attention of one of their engineers in solving some of our problems.

We now have an *Antrodemus* skull ready for the mount weighing six pounds and four ounces, whereas its plaster counterpart weighs thirty-three pounds, roughly five times heavier. This lightness will greatly reduce the steel supports necessary for the forward part of the mount and will eliminate the pectoral prop.

As fabulous as this material appears from my description, it is not without its problems. For some applications the difficulties encountered in its use may seem too great, but in others involving weight and strength it is well worth the bother.

The manufacturer provides a bulletin with processing instructions which cover the general characteristics and preliminary data necessary

Fig. 1. Painting the rubber mold with Selectron. This mold, of half the skull of Antrodemus, *was first painted with a thin coat of liquid floor wax then dried.*

Fig. 2. Lashing the assembled mold and plaster backing with a stretch-resistant cord. Rubber tubing may be used very effectively for this purpose.

Fig. 3. Fashioning a funnel-like opening around the pour spout with modeling clay. Potters clay is unsatisfactory because of its moisture content.

Fig. 4. Weighing the liquids with accuracy on a laboratory beam balance.

Fig. 5. Beginning the mixing process with a rod in a drill press. It was finished with a wooden spatula.

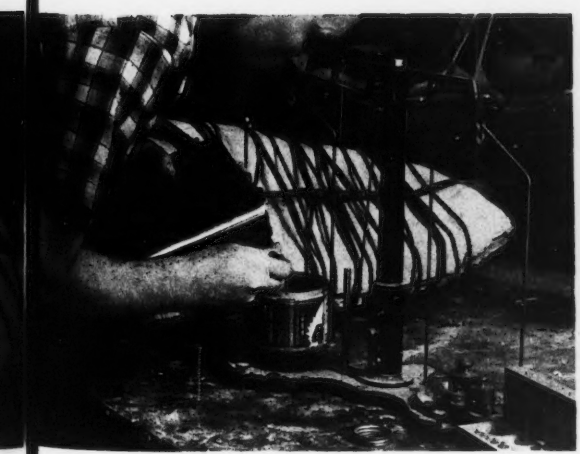


Fig. 4

Fig. 5

for any use of the foam.

I will give a brief summary of my experience here in the application of rigid-foam to complex flexible and rigid molds. I have tried to discover, for the purposes of this article, all the common problems to be met in casting foam and the most essential precautions relating to safety and health. If these suggestions are followed, some of the expense and failure of experimentation by others can be avoided.

Casting rigid-foam is a lively and interesting experience compared with casting inert plaster. Preparations can be made in a leisurely manner up to the point when the two liquids are combined. After the catalyst is added to the prepolymer, about two minutes remain to mix and pour the material properly into the mold. If unexpected difficulties arise, you may find yourself with a lively batch of foam on the table and floor.

The first experimental casting with rigid-foam should be done in a simple mold of no more than a pint in volume. Such small projects will provide the experience necessary for handling larger and more difficult casts, and will also be less expensive.

Proper venting is necessary to eliminate excessive pressure in case of a poorly calculated load and to eliminate an air-lock when the thick liquid is poured into the mold. An opening distant from the pour spout will accomplish this. It may be necessary to pour into more than one entrance in order to insure adequate amounts of liquid in different areas of a complex mold. Trapped air pockets are usually not a great problem, as the foaming substance seems to carry well into all parts of the void. Unfilled extremities may be due to a lack of sufficient liquid rather than trapped air.

Do not stop vents! The excess gas produced by the reaction must be allowed to escape. The load should be sufficient to produce some foam-over to insure enough to fill the void completely. Some figures are provided below to aid in load calculation.

The densities determined by the manufacturer are listed in their bulletin. These weights per cubic foot were provided by an "open-blow," that is, expanded without a mold. Each density varies within its range according to the difference in temperatures, shapes of voids, and mixing techniques. Generally, lower temperatures and more complex casts increase the weight of the foam.

Fig. 6. After approximately forty seconds of machine and hand mixing the liquid is now being poured into the mold. Note rubber gloves.

Fig. 7. The reaction is nearly complete, and the excess foam is pouring from the spout.

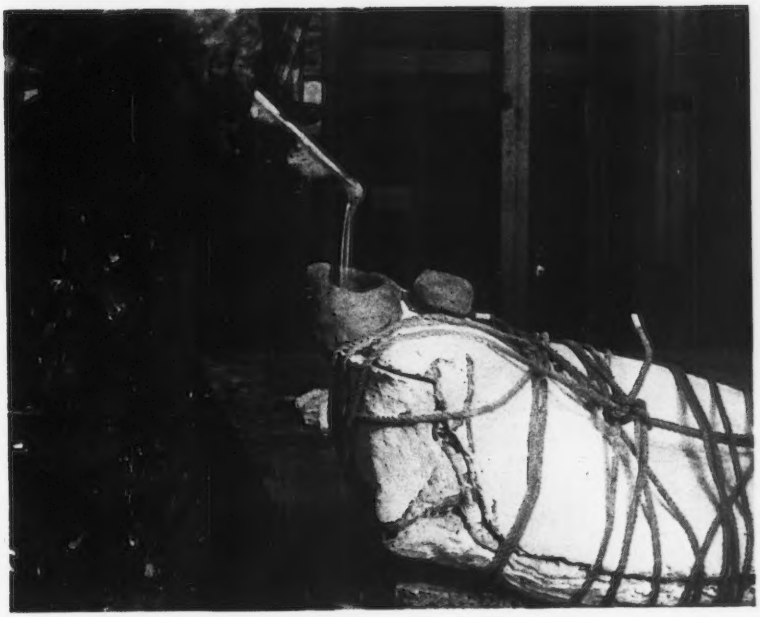


Fig. 6

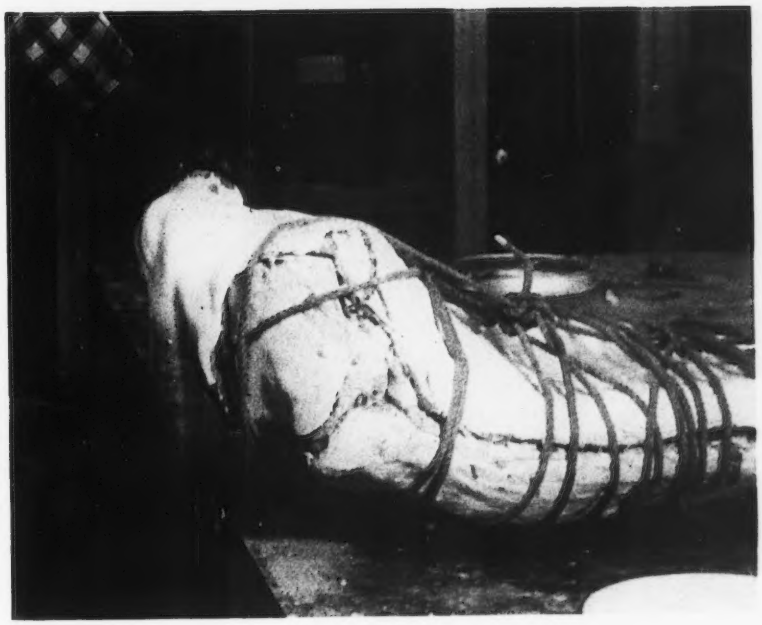


Fig. 7

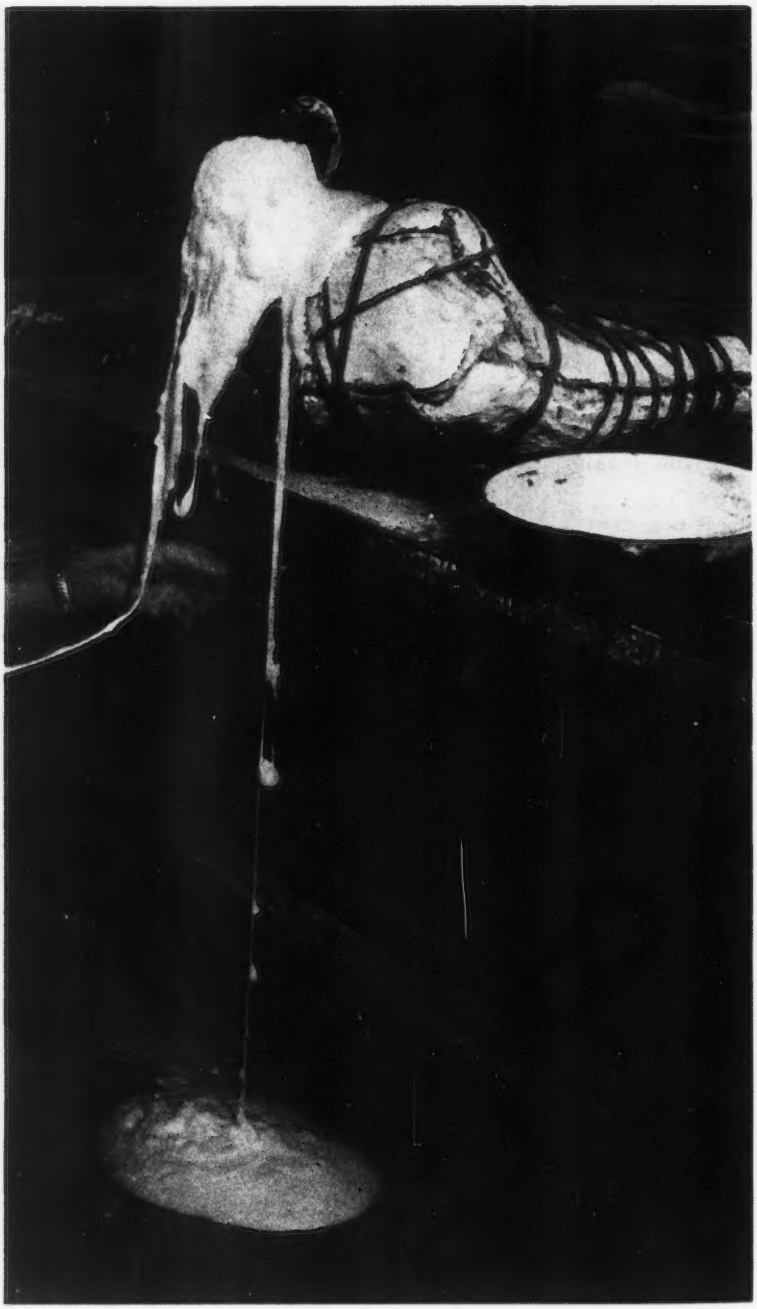


Fig. 8

RUBBER MOLDS

Rubber molds must have a plaster backing to make possible the lashing of all sections securely together. Without a rigid backing the cast will be distorted by expanding pressures. The molds must be in good condition before use. The foam will seek out all imperfections, such as peeling or bubbles, and aggravate them.

The mold surface, as well as areas likely to receive leaks, should be well coated with a suitable separator. The foam adheres to most surfaces with great tenacity and may seal together the edges of the plaster backing if they are not protected.

The plaster backing should be about one inch thick per foot of mold length to provide adequate strength for overcoming normal internal pressure during the foaming period. Insufficient venting or overloading may cause a thick, well-lashed plaster backing to crack. Do not seal the vents during reaction, as severe pressures may be developed.

A long rubber tube, stretched and wound continuously about the mold assembly, will exert a tremendous force, binding the mold sections together. Sash cord or similar stretch-resistant material can be used to secure the assembly against expanding pressure, but it is not so efficient as elastic binding.

Care must be taken to insure the complete dryness of the molds before casting. The presence of water in any form will upset the fine chemical balance within the foam, resulting in a fouled reaction.

Elapsed time is critical. The liquid is about the viscosity of Karo syrup and requires a pour spout with a minimum diameter, up to one and one-half inches on large molds, to allow rapid entry of the liquid into the mold after mixing. An enlarged funnel lip built around the pour spout with modeling clay may further insure ease of loading. Potters clay should not be used because of its moisture content.

The foaming should be done under an acid hood or in a very well-ventilated area, as the reaction produces a vapor which is irritating to the lungs and eyes. The production of this vapor occurs for a period of less than five minutes, so it is not too difficult to handle.

Rubber gloves should be worn, as the liquids are mildly alkaline and may be irritating to the skin. Any contact can be washed off immediately with alcohol. The company suggests flushing with water.

It is well to use throw-away paper cartons for the mixing process, as the liquids adhere with great tenacity to all containers. Alcohol or acetone is

Fig. 8. Excess foam formed around the pour spout and ran over onto the floor. Sand has been thrown on the floor to allow separation of foam and concrete.

Fig. 9

Fig. 10

a good wash-up if used immediately. A good supply of paper towels is useful. The uncombined liquids do not change character, so may be washed off at one's leisure.

Mixing can be done by hand or by machine. A rod with a small foot on the bottom can be effectively used in a drill press at low speed. On quantities of a pint or more I begin in this fashion and finish the mixing with a spatula or a wooden tongue depressor. At room temperatures (75°–79° F.) mixing can be accomplished in thirty to forty seconds, and should be finished in at least one minute. The mold must be loaded immediately after mixing. If the liquid begins to foam in the mixing bowl, it is lost, for it cannot be poured into the mold.

The reaction time and foam densities vary according to the method of mixing and temperatures of the liquids and molds. Activity is decreased with lowered temperatures. Quantities of less than a pint can be mixed entirely by hand. The mid-densities allow about two minutes for mixing and pouring, and, if your preparations have been careful and complete, this period of time is quite adequate.

Immediately after loading, distribute the liquid within the void by leveling or tilting the mold. The object is to favor the largest areas with the most liquid. Too much liquid in a thin section of the mold results in pressures higher than normal.

Foaming begins slowly but the full height of foaming is reached in two or three minutes at room temperatures (75°–79° F.). It becomes tack-free in about five minutes, and simple shapes can be demolded and subjected to normal handling in about twenty-five or thirty minutes. Thin or complex casts should be cured before being removed from the mold. Foam will cure completely in twenty-four hours, or it may be accelerated by being heated to 180° to 200° F. for one or two hours. Trimming and finishing can be done as soon as the cast is removed from the mold, but I feel it advisable to wait forty-eight hours before coloring it.

PLASTER MOLDS

The technique for rigid molds is essentially the same as for flexible ones. Oily separators that should not come in contact with rubber may be used very successfully on plaster ones. Stearine (stearic acid dissolved in kero-

Fig. 9. Demolding the cast. One-half of the mold is made of white rubber and the other half from black rubber, for no particular reason. The opposite edges of the mold are taped together to insure continued alignment.

Fig. 10. Cast completely removed from mold, showing excess material along seam lines.

sene) provides a very good release if used on perfectly dry molds.

Plaster molds are easy to use with foam if they are well designed. Foam will not tolerate undercuts, because there is no shrinkage after casting. The mold assembly must also be securely bound together to prevent a swelling or thickening of the cast. Vents should exit between two mold sections, otherwise the resulting boss will make demolding difficult.

Separators must be carefully applied to all surfaces likely to come in contact with the foam. Coating the opposing edges of the mold sections is necessary, or the foam may seal them together. A coating of wax will keep the spill-over foam from fouling the exterior of the plaster backing in the region of the pour spout. A handful of sand thrown on the floor will make possible the removal of any spill of excess foam.

The surface of a good foam cast is smooth and dense, resembling the surface of the mold. Removing this surface by cutting, or by sanding off seam lines, or by any other alteration exposes the open cellular construction of the interior, making it necessary to "fill" the surface. This can be done with papier maché or plaster of paris. Incompletely filled, this open surface resembles the interior of porous bone and may in some cases be used to advantage.

The *Antrodemus* skull was cast in four parts and assembled later with wood screws, plaster, and papier maché. Wood screws hold well in foam and are excellent for the assembly of cast parts. They must be long enough to insure good penetration, and a maximum-screw-diameter hole must be drilled through the first piece. Screws are not essential, however, because the porosity of the foam allows a good penetration of plaster, or maché, producing an excellent joint.

Rigid-foam is a very efficient vapor barrier, and for that reason cements requiring evaporation, such as Duco or Elmers Glue, reach their maximum strength only after eight or ten days of drying.

SEPARATORS

The Pittsburgh Plate Glass Company manufactures a mold release under the trade name Selectron, 5937, which provides a good separation for foam casting. The mold is first coated thinly with a liquid floor wax and dried. A thin coat of Selectron painted on this surface produces a thin film which demolds with the cast and can be washed off with water. Liquid floor wax used alone is a poor release. Being water solvent, Selectron washes easily from brushes and from the mold, in case repeated use coats the surface too thickly and impairs detail. A simple coating of thin

Fig. 11. Trimming the cast with a small saw and a knife.

paste wax works well in both rubber and plaster molds, if very fine detail is not present. Too much paste wax may obscure fine detail.

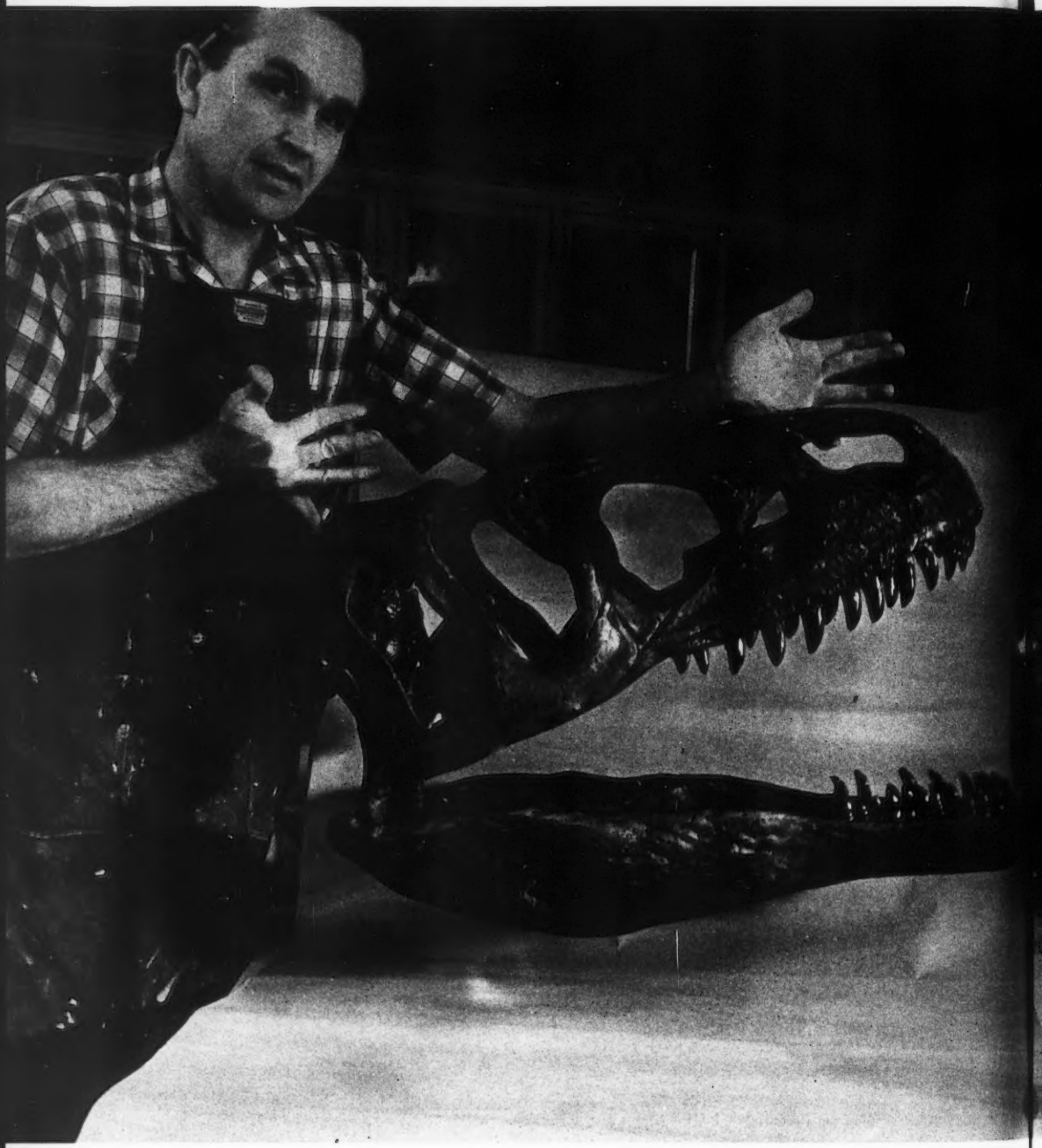
Plaster molds also require a coat of liquid floor wax before the Selectron. Metal or plastic molds need not be waxed first.

There are other separators that may be effective, and, though I have not experimented with them, other persons may desire to do so.

For an experimental order of rigid-foam, I suggest a medium density foam of eight and one-half to nine pounds per cubic foot. This is identified as "Boscel K Series, Rigid Foam, Number 1822-1864." A request should also be made of the manufacturer for their information bulletin concerning its use.

The proportions for mixing the prepolymer and catalyst are marked on each container. The one listed above is combined in a ratio of one hundred parts of prepolymer to eighty-two parts of catalyst (by weight).

Fig. 11



The calculation of loads may be approached in the following manner: Weigh a dry plaster cast of the specimen. The weight of the mixed liquids should equal one-third of the weight of a dry plaster cast. This will allow sufficient excess to insure a full cast. A plaster cast weighing thirty pounds will require ten pounds, mixed weight, of liquids.

SUMMARY OF TECHNIQUE

1. Molds must be in good condition, with more than one vent.
2. Mold release, or separator, must be properly applied.
3. Rubber molds must have a rigid plaster backing which entirely envelops the rubber.
4. Use masking tape in assembly of rubber-mold sections to insure proper alignment.
5. Lash assembled rubber mold and plaster backing, or plaster mold, with rubber tubing or stout cord. Thickening of cast will indicate insufficient lashing.
6. Provide adequate pour spout. Build up with modeling clay if necessary.
7. Work in a well-ventilated area, use rubber gloves for mixing and pouring, and have wash-up material ready.
8. Use laboratory beam balance to obtain accurate measurement of liquids.
9. Mix by machine or hand. About forty seconds is sufficient. Mix well.
10. Load mold immediately after mixing!
11. Level or tilt mold according to the areas needing most liquid.
12. Do casting in a sand box or sprinkle sand on table or floor where foam-over is likely to occur.
13. Do not plug or stop vents!
14. Cure cast for twenty-four hours before demolding, or accelerate by heating to 180° to 200° F. for one or two hours.
15. Trim seam lines with a knife, saw, or sandpaper.
16. Fill open-cell areas and repair any imperfections with your favorite plaster or papier maché mix.
17. After forty-eight hours the cast may be colored.

Many chemicals intended to be combined by the purchaser to produce a synthetic material carry the manufacturers "non-warranty" on the labels, owing to variable conditions beyond the company's control and to in-

Fig. 12

Fig. 12. The finished skull and jaws. Six different pieces were cast and assembled with wood screws and papier maché. This skull weighs six and a quarter pounds; its plaster counterpart weighs thirty-three pounds.

dividual interpretations of instructions that make a guarantee of results unwise. I also make such a statement of non-warranty: The information contained in this article represents my interpretation of the results of my experiments. It does not presume to provide the best or the only answers to the problems of casting rigid-foam. The article is intended to help everyone wishing to become acquainted with this interesting material and possibly to use it as a new way to do an old job.

Comments

With this issue CURATOR *is establishing a section for comments. Readers who may wish to express themselves concerning articles that have appeared in the journal, or concerning other matters pertinent to museum theory and practice, are cordially invited to send their contributions to the Editor-in-Chief. All such comments must bear the name of the author. The Editorial Board of* CURATOR *reserves the right to accept or reject manuscripts submitted for this section.*

PACKAGED SIMPLICITY VERSUS CROWDED COMPLEXITY: COMMENTS ON A RECURRENT THEME AT MUSEUM CONFERENCES

At the last conference of the American Association of Museums there was opportunity to hear at least six different speakers voice their objections against crowding and complexity of museum exhibits by glancing remarks in passing, or by direct condemnation in talks on many subjects offered before different sessions and sections of the Association. It is the "modern" attitude. It is the one theme on which all will agree from honest conviction or out of simple fear of being old-fashioned.

In Boston we could also hear at least one reference to the need for proper "packaging" of our product, which has been so successfully demonstrated in the world of commerce. This is merely another point on the antlers of modernism, of slightly more recent origin. Endless reiteration has made our minds drowsy, and our heads nod wisely to the tempo of the old modern theme.

But such few critical tests as have actually been made clearly show that simplicity in itself is not uniquely related to educational effectiveness. A more complex presentation may actually result in better and faster learning. It all depends upon the nature of whatever is being taught, upon the surrounding circumstances, upon the condition, preparation, and previous experience of the learner, and upon other factors.

If simplicity is not a virtue in itself, what other foundation could there be for the modern dogma of museum philosophy? The evidence quoted in its favor usually relates only to the number of people attracted to and stopping before exhibits of various degrees of complexity. But this is no evidence of whether or not they learn anything from what they see. Could it be that simplicity as such is more attractive, regardless of whether or not it teaches any better? This sounds reasonable until we remember the fact, well known to any parent of boys, that no museum has ever succeeded in creating an exhibit half as fascinating to a youngster as a well-assorted junkyard or even the city dump. But these are not simple, nor well-packaged, nor uncrowded displays. And there is no reason for adult superiority when we note the attraction of the antique shops that line our highways and seem to thrive in direct proportion to their

deliberate air of desperate chaos and confusion. It would therefore appear that crowded complexity without packaging may also exert greater attraction at any age than packaged simplicity, given the right circumstances.

If simplicity in itself is not necessarily more effective educationally or more attractive, and can be the opposite in both regards in many comparisons, what is left to bolster our doctrine? Could the crux of the matter be that it is much more difficult to create an attractive crowded and complex exhibit than to arrange a pleasing and simple one, and that we therefore subconsciously want to nourish a belief that will explain our failures of the past and protect us against ever having to try the more difficult path again? If this should be the true reason for our universal condemnation of crowded complexity in museums, we are grievously at fault, and impoverish the performance of our institutions by quite unnecessary restrictions upon the artistic "vocabulary" we develop and make use of in our exhibits.

Since modern attempts at designing for abundant display are so very rare, at least in museums, it is difficult to find enough evidence for positive generalizations about how to make crowded complexity alluring and diverting. But some negative principles are perhaps discernible.

From the observation of many "badly" crowded exhibits one may surmise that one of the exhibit designer's worst dilemmas may be curatorial insistence upon a bushelfull of labels for each bushelfull of specimens. Undoubtedly one of the great fascinations of haphazard crowdedness is the opportunity to conduct one's own search without too many guideposts dictating the way. It is not necessary to have an identifying label for every specimen on display. Omitting specific labels for many of the objects does not mean leaving out their educational purpose and usefulness. A crowded museum exhibit should differ from a crowded junkyard in that it only appears to have accumulated in haphazard abundance. By subtle selection and arrangement the "extra" specimens may be made to tell their own story, adding both detail and depth to the main theme, and perhaps doing it all the more effectively for leaving the verbalization of their message to the mind of the observer instead of merely to his memory of something read.

If the exhibitor can be liberated to use labels with discretion, he still faces the formidable and forbidding task of creating a tightly planned image of seemingly casual profusion, with the enchantment of a tangled skein that will lead the viewer unaware on unmarked paths to knowledge. No wonder we find it safer and easier to condemn crowded complexity than to try to use it!

When we add the copious display to our vocabulary of styles of exhibition we shall undoubtedly find that the obvious formations of paucity will not suffice for the parade of plenitude. The disposition of the various elements must become more intricate and less conspicuous in some sort of direct relationship to the concentration of objects used. Specimens on file soon become boring and repugnant, but the outpouring from a cornucopia shows the subtle dynamic harmony of a pattern of flow that has intrigued artists and decorators through centuries. Attention must shift from the array of the units to the mold of the aggregate.

The beauty and value of highly select simplicity are beyond dispute. But let us not from sheer mental indolence adopt a purely negative doctrine that denies us the values of all other forms of presentation. So far as anything can be proved today, the case against crowded complexity rests solely upon our objections to a more difficult task in which we have often failed in the past.

A. E. PARR

PICTURE CREDITS

Pages 9–12, Milwaukee Public Museum; pages 30, 36 (top), and 38, Arline Strong; pages 35 (top), 36 (bottom), and 37 (bottom), J. Chatfield; page 37 (top), Morton Yourow; page 42, from a picture album, "Carl Hagenbeck's Tierpark," no date; page 45 (top), Ideal Toy Corporation; page 45 (bottom), Museum of Science, Boston, Massachusetts; pages 58–68, Colonial Williamsburg, as follows: pages 58–59, 66 (top left and right and bottom left), and 68, John Crane; page 66 (bottom right), Herbert Barnes, Jr.; pages 78, 79, 81, 82, 84, 87, and 88, James A. Jensen; all others, The American Museum of Natural History.